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Superion Pan



For Good Negatives

Du Pont Superior Pan possesses those photographic qualities you require to produce a good negative. It has a long scale gradation that registers the detail in shadows without, at the same time, plugging the highlights. Its color sensitivity is balanced correctly for both natural and artificial lights. It gives you the speed and fine grain qualities you need for general production work. In short, you can count on Superior Pan for the kind of negative that makes a beautiful print.

Du Pont Film Manufacturing Corporation

INCORPORATED

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TRADE WILLIAM ONICA BLV.



New Photrix SS Exposure Meter with Wider Reach of Sensitivity; Simple Operation

THE NEWLY ANNOUNCED Photrix SS exposure meter is claimed to fill the gap between indoor and outdoor light control through providing so much additional sensitivity that its measuring range extends from brightest sunlight far into the field of indoor photography. In addition, the Photrix SS boasts of a simple, self-explanatory reading method, of smooth, compact and attractvie appearance and of highest grade accuracy and workmanship. Its movement is made by the Cleveland, Ohio, firm of Hickok for many years a well known name in the field of precision electrical measuring instruments.

The design and reading method of the Photrix SS embodies a number of novel and interesting features. While the exposure meter is in the aiming position, it is not neessary to take any readings of figures at all but only to set the ring so that the red index registers with the needle indication. This automatically lines up all usable combinations of film speed and exposure time on the lower part of the dial. The glass window is provided with a red index and turns in the calculator ring, thereby serving the double purpose of protecting all the scales and of setting the exposure meter for the particular film speed so that the user does not need

to remember his film speed every time he takes a reading.

The Photrix SS is very flat, measuring only 7/8-inch in thickness. The surface of the meter is completely smooth without any protruding parts, levers or screws. All figures are under glass, very legible and well spaced. The scales are clearly marked and easy to identify. The casing consists of a one-piece bakelite molding of high strength and rigidity. The movement is operated by a cobalt steel magnet and a high output photocell of per-The Photrix SS is distributed by Intercontinental Marketmanent stability. ing Corp. of New York City. Retail price is \$17.50.

Improved Slide Projector Model DP Argus Announced by International Research

NEW BRILLIANCE in a slide projector is claimed by International Research Corporation for its Argus Model DP, which will sell between \$20 and \$25 and will employ a standard 110-120 volt, 100-watt projection lamp in conjunction with a newly engineered condensing and objective lens system. The lamp socket will handle a 200-watt lamp, if desired. Lens focal length is five inches.

Streamlined design of the DP projector allows for a generous-sized lamp-house with new ventilation principles that keeps heat to a minimum. It has a die-cast base and all-metal construction, is finished in Argus gray with chromium and Chinese-red trim. Lamp-house is hinged for easy access to lamp, reflector and condensing lenses. An improved type of slide carrier, of heavy-gauge stamped steel with cadmium plated surface, is unusually rigid and holds two two-inch slides securely and without danger of jamming in the slide aperture.

There is a tripod socket in the base of the projector, making it unnecessary to rest it on a table or other surface. A locking tilting-foot for elevating the image on the screen is built into the front of the base. The DP is equipped with a nine-foot extension cord, with moulded rubber plug, and a snapswitch on the cord a few inches from the projector. The

cord is Underwriters'-approved.

A carrying case accommodating the projector and 150 indexed slides in a hinged lower compartment will list at around \$5.00. When projector and case are ordered together, there will be a list price saving of \$1.00 or more. Case is of strong plywood construction, leatherette covered and nickel trimmed.

Ampro Brings Out Two Moderately Priced Models of 16 mm Sound-Film Projectors

AMPRO CORPORATION is bringing out two new and improved low-priced 16 mm sound-on-film projectors, which are basically new in design, and priced to fit a moderate budget. A radically new adaptation of Ampro's

Top: Ampro's new type 16 mm sound-on-film projector. (Page 1. Column 2); Center: two views of the Photrix SS exposure meter. (Page 1, Column 2); Bottom: New Model DP Argus slide projector. (Page 1, Column 2).



standard sound mechanism assures sound reproduction of a quality found in higher priced Ampro models. Brilliant, flickerless picture projection is assured with 750-1000 watt illumination.

The new models are compact, quiet, and easy to operate. All in one case they are small and portable, weighing only 49 pounds, including 1600 foot reel, carrying case, accessories and cords. Operation so quiet that a blimp case is unnecessary. All controls are centralized on a single illuminated panel. Reel arm brackets are permanently attached and swiveled into position so that there are no parts to set up and factor. eled into position so that there are no parts to set up and fasten.

Threading is simplified with only two sprockets and film guides to

facilitate threading.

Amprosound Model "X," for industrial use, is equipped with 60 cycle

AC motor and sells for \$275.

Amprosound Model "Y," for educational use in classroom and small auditoriums, is equipped with Universal AC-DC motor with silent film speed and sells for \$295.

Versatile Leitz VIII-C 100 watt Still Projector Has Many Novel Features

DESIGNED FOR home use, visual education, and for salesmen who desire a still film projector for showing pictures before small groups of people, the new Leitz VIII-C 100 watt projector presents many novel features. It measures 61/4x61/4x3 inches, not including lens; is made of plastic and metal, plastic around the front of the projector where heat should not be transmitted and metal around the lamp house where heat should be transmitted.

The VIII-C projector embodies a black top 100-watt, 110-volt projection lamp and may be used for projecting either 2x2 inch glass slides or 35 mm film strips. Slide changing gate is interchangeable with the film carrier and the front of the projector may be rotated so that both hori-

zontal and vertical pictures may be projected from film strips.

A three lens condenser system and a silvered reflector behind the projection lamp makes illuminating system unusually efficient for a 100-watt projector. The condenser system is easily removable so that either 50 mm Leica camera lenses of a special 85 mm projection lens may be used. A heat absorption filter between lamp and condenser system aids in dissipating the heat, while the black top of the bulb permits the tops of the inner and outer lamp housings to be open for maximum ventilation. Current is controlled by a toggle switch built into the rear of the projector.

The projector may be obtained without lens (for use with interchangeable 50 mm camera lenses) or with the Hektor 85 mm f:2.5 projection lens. With slide changer for 2x2 inch slides and condenser system for 50 mm Leica camera lenses, but without lenses, it lists at \$42.

New Edition of Wabash Exposure Guide Available Free to Photographers

THE NEW edition of the Wabash Exposure Guide for flash and flood photography is now available free to every photographer writing the Wabash Photolamp Corp. at Brooklyn, New York. This pocket guide from the manufacturers of Superflash and Superflood photolamps is one of the most complete ever published, and lists over 120 different films in 35 mm, cut film, roll and film pack, made by Agfa, Defender, DuPont, Eastman, Gevaert, Hammer, Elford, Perutz, Univex, etc., together with data and exposure tables on their correct use in making flash and flood pictures. Complete data and exposure tables are also included with the various 8 mm and 16 mm films for home movies, as well as tables on Dufaycolor and Kodachrome films.

Agfa's New Printing Frame, Safelight Outfit and New Acid Hypo Size

A NEW PRINTING FRAME for negatives ranging from 1x1½ inches to 4x6 inches, has just been announced by Agfa Ansco Corporation. The Agfa Masking Print-Frame, as the new model is called, is equipped with adjustable masks, so that negatives of various sizes may be accommodated. This improved masking device also makes possible easy and quick cropping of negatives. In addition, lengths are marked off in inches along each side so that the print may be made accurately to desired dimensions. It retails at \$1.50.

A UNIVERSAL SAFELIGHT outfit with interchangeable safelight filters, introduced by Agfa Ansco Corporation to retail at \$1.95, includes a black enamelled Agfa Safelight Lamp, Agfa A-3 Green Safelight Filter, Agfa A-7 Red Safelight Filter and a 10-watt Yellow Bulb. Used in the lamp without a filter, the yellow bulb provides safelight illumination for printing papers such as Convira. With the red filter, the safelight may be used for Plenachrome and other orthochromatic films. When developing panchromatic films, except those which require development in total

Top: two views of new Leitz VIII-C still projector; upper shot shows use with Hektor 85 mm f:2.5 projection lens, lower shot shows use with interchangeable Leica camera lens; (Page 2, Column 2); Bottom: Two new Agfa products; upper shot shows new universal safelight outfit, lower picture, new printing frame for negatives $1x1\frac{1}{2}$ " to 4x6", (Page 2, Column 2).

International BOTOGRAPHER

A JOURNAL OF MOTION PICTURE ARTS and CRAFTS

Editor, Ed Gibbons; Managing Editor, Herbert Aller: Art Editor, John Corydon Hill: Business Manager, Helen Boyce.

Contributing Editors: Lewis W. Physioc, Fred Westerberg, D. K. Allison, George Hurrell, J. N. A. Hawkins, Paul R. Cramer, William Comyns, George M. Haines.

Vol. X.

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KALART WIRELESS PRESS SPEED FLASH Available in January

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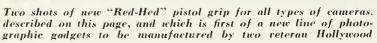
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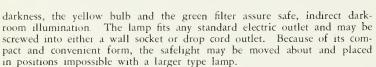
MICROMATIC SPEED FLASH LENS-COUPLED RANGE FINDERS

THE KALART COMPANY

Hollywood 619 Taft Building New York 915 Broadway







IN ANSWER TO the many requests of photographers for a larger sized container of acid hypo for the sake of convenience and economy, a new one-gallon size (two-pound) container of Agfa Acid Hypo has been announced. Available at all photographic dealers at 45 cents, the new one-gallon size of acid hypo provides a ready-to-use fixing solution when dissolved in water.

Zeranski and Allen Start New Photographic Gadget Organization with Red-Hed Grip

THE "RED-HED" Pistol Grip for all cameras, cine and still, utilizes standard cable release for "Trigger." It requires a 24-inch cable on 4x5 Speed Graphic. By using this method of holding camera and shutter release a squeeze grip on trigger gives a shock proof shutter trip.

The grip is made of cast aluminum and finished in black crackle finish with the felt base plate covered with red felt. The camera screws are made from brass to prevent sticking in the base of the camera. An added feature is that the screws are furnished in addition to the standard American 1/4-20 on special order in the European 3/8-16 thread which eliminates the use of highly unsatisfactory bushings.

The Red-Hed Pistol Grip was designed by Edmund E. Zeranski and is being manufactured by Paul H. Allen, both former cameramen and formerly members of Tocal 659, IATSE.

This is the first of a series of practical camera and photographic gadgets which will be designed and made by the pair, to be marketed on a reasonable price basis. The Red-Hed Grip is being sold for \$2.00 postpaid in U.S.A. by the Red-Hed Manufacturing Co., P. O. Box 2524, Hollywood, Calif.

Three Daylight-Type Photoflood Lamps Announced by General Electric

THE INCANDESCENT LAMP DEPARTMENT of General Electric Company will make available this month three new photoflood lamps equipped with inside-frosted blue daylight-type bulbs. The new lamps will otherwise be identical in size, shape, and dimensions of lamps in the present G. E. Mazda Photoflood line.

The new daylight photofloods are recommended for use with 8 mm, 16 mm, and 35 mm "regular" Kodachrome film. It is believed they will find widest application in indoor photography at times when artificial light of daylight quality is required to supplement natural daylight. No filters, it is stated, are necessary when using these newest photofloods.



cameramen. Left: pistol grip with Speed Graphic Right: with 9x12 cm. still camera.

List prices quoted on the new daylight-type photoflood lamps are: 50 cents for No. 1; \$1.00 for No. 2; and, \$2.50 for No. 4 lamp.

New Leica Wrist Strap and Price Slash on Leitz Reelo Developing Tank

A NEW WRIST-STRAP for the Leica, which can also be used with any other camera equipped with a standard, American tripod socket, is announced this month by E. Letiz, Inc.

With the camera secured to the wrist by means of this accessory, the photographer may go about his business without fear of dropping the camera; and it may be used to brace the camera in the hands when making exposures. This latter is a highly desirable advantage when pictures are taken under poor light conditions that require the use of the slower, "instantaneous" shutter speeds. In situations of this kind use of the Wrist-Strap either forestalls or minimizes camera movement, thereby insuring maximum picture sharpness.

The strap itself is of the adjustable hook and eyelet type. Its 18 eyelet holes permit wide latitude in fitting it to wrists of different size. The Wrist-Strap is attached to a large disc-shaped base with a screw that fits into the tripod socket of the camera—the socket of the Leica is located on the right-hand side of the camera base-plate. Injury to the part of the camera near the tripod socket is prevented by a felt padding surrounding the base of the screw. The outer edge of the disc-shaped base is knurled to facilitate attaching and disconnection of the Wrist-Strap from the

REELO 35 MM Developing Tank, distributed by E. Leitz, Inc., has now been reduced in price to \$4.50. The Reelo tank is made throughout of chemical resisting bakelite so that it has great strength and will give years of constant service. The important part of the tank, the reel itself, is a single unit and non-adjustable. The value of this, the makers claim, is that the film grooves can never get out of alignment nor can the distance between the grooves vary.

New Filmosound Film Library Book from B&H Lists Over 2,000 Reels

THE FILMOSOUND Film Library Book just issued by Bell & Howell fully covers the company's service in providing a single film source adequate to meet the most diversified demands of educational institutions, industry, homes and communities. It is a treasury of sound-on-film features, comedies, cartoons, adventure, nature subjects, music, religion, history, news reels, sports and teacher training.

Its sixty-four 8½x11-inch pages are packed with titles, description, classification and pricing of over 2,000 reels of sound film offered for rental or sale by the Bell & Howell Filmosound Library. There is also much information on the method of booking and servicing film prints, on the varied application of listed films to subject-matter fields, and criteria

or the strict appraisal of all offerings. The book is illustrated with cenes from listed films.

A separate 8-page alphabetical index, treated as an insert, facilitates nding films known by title and gives outright sale prices. Both Filmound Library Book and index are "binder-punched" for later inclusion of nticipated additions and for filing.

A majority of film listings in the Filmosound Library Book—over 2,000 cels—are for entertainment, but selected, too, with a view to cultural alue. Feature films drawn from the great producers are grouped by con-

ents: historical, occupational, musical, human relations, etc.

A foreword describes the method of using feature films in school audipriums for educational purposes, tied in directly with classroom preparary and review activities. Similar suggestions are included with the headngs of other major groups of films, such as serials, travel, nature, current

vents, foreign language teaching, vocations, etc.

Each of these groups is further broken down for ready reference. The avel films, for example, are grouped by continent, then by country and some cases by even further subdivisions. Religious pictures are subivided into Biblical, geographical and ethical discussion groups. Nature lms are classified under physical, plant, marine, insect, bird and animal orlds. There are over 300 reels dealing with social science, over 100 on eneral and biological science. Other special groups include music, current ents, and Boy Scout pictures. There are close to 200 cartoons.

A copy of the Bell & Howell Filmosound Library book is sent free

every owner of a 16mm sound projector registered in the Bell & Howell es. It is only required of such owners that they report their make of achine and purchasing source in sending for their free copies. Addional copies and copies to non-owners of sound equipment are priced at

Scheibe Reminds of Many Uses of Monotone Filter

FEORGE SCHEIBE reminds amateur and sub-standard photographers that many them are over-looking one of the every-ready standbys of the professional ameramen, the monotone filter or monocle. The veteran pioneer in the filter

anufacturing field says:

"How many times have you wondered: What kind of a picture will that take? Straight light, cross or back-light has everything to do with the shot olor adds to the problem. Wondering about the shot will mean nothing. hooting it will mean something, either it is a shot worth while or it is a isappointment. Whether you are an amateur or a professional does not ake much difference, you still are unable to tell to a degree what any shot ill look like. You can guess at color and light but that will never do. only the well known Monotone Filter will tell you to a degree of fineness that any shot will look like. There is no guesswork about it.

"In motion picture work the Monotone Filter plays an important part in king pictures. It is used in the focusing mount of the cameras. These are inch round and are in almost every camera in the Hollywood Studios and herever motion pictures are made. They tell just what every shot will look ke before it is taken. Make-up is shown in the degree it will photograph. he faintest tints are shown. Costumes show just the shade they will take hotographically, every combination of color will show how it will be taken. very color and lighting of a shot will show how it will look photographic-

ly through the Monotone Filter.

"For the Transparency Department they show how the background will ke, whether too light or too dark. There is no limit to what use they can put. It is a universal filter for it can be used for nearly every kind of ork pertaining to photography. It is a telltale for every kind of a shot.

'The' Monotone Filter is used in every kind of a photographic studio, ortrait, commercial and other studios. Of course, it is used for viewing

VEW PUBLICATIONS

(Outstanding technical volume published during the past month was nquestionably Photographic Chemicals and Solutions, by J. J. Crabee and G. E. Matthews, of the Kodak Research Laboratories. It was ublished by American Photographic Publishing Company of Boston, Mass... t \$4.00, handsomely cloth bound in blue. While the volume was received fter our regular deadline, we decided it merited an immediate "once over ghtly' so we passed it to Thomas Bryan, veteran business representative f the Hollywood Laboratory Technicians Local 683, IATSE, for his exert opinion.—Ed.)

Chemicals and Solutions

PHOTOGRAPHIC CHEMICALS AND SOLUTION:" is a modern photographic nanual dealing with the various problems encountered in the motion picare industry today, and is welcomely different from many other books n the same subject that deal with obsolete methods no longer in practice. covers very completely the apparatus used in the industry, the different pes of materials for constructing various type of equipment, etc. The hapter on Temperature, Measurement and Control is very thorough and overs all phases of the work.

A very extensive section on mixing and using photographic solutions xplains in full the effects on film by chemicals and solutions, also the ffects of temperature on solutions and consequently on the film.

The chapter dealing with Directions and Precautions in Handling Pho-





PROFESSIONAL DEPARTMENT at Cliff Thomas' Hollywood Cam era Exchange, recently completed in an expansion move, is pictured here for the first time. Thomas has arranged the extensive array of professional equipment of the Camera Exchange's huge stock in separate surroundings from the amateur line, so that professional photographers, soundmen and other technicians may inspect it at their leisure. Top view shows the department from the office looking toward street window; lower shot from street window to office, with Cliff Thomas behind the counter to greet W. T. Crispinel of Cinecolor,

tographic Chemicals is worthy of note to anyone working with chemicals,

who dropped in to inspect the new setup.

as it explains the prevention of chemical poisons that one might receive while working with solutions, fixing baths and photographic chemicals. It gives suggestions relative to gases and liquids used in the cleaning of film and the gases and liquids that are created by the film passing through various chemical solutions that are harmful to the human system. article alone is worth the price of the book.

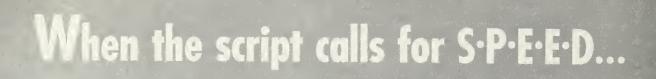
The chapter on Formulas is complete and especially valuable in that the formulas are written in a manner that the average layman can understand. It is not necessary that the reader be a graduate chemical engineer

to know exactly what he is doing.

In general the writer recommends this book to all persons engaged in photographic processing. It is a very valuable and up-to-date handbook of the sort that one likes to have always handy for ready reference.

New Editions of Eastman Handbooks

ALSO RECEIVED last month were the latest revised editions of two valuable technical handbooks of Eastman Kodak publication. The eighth edition of "The Fundamentals of Photography," by Dr. C. E. K. Mees is well-known and the new edition is revised and brought up to date. One of the most valuable and informative reference works from the Eastman researchers is the ananymous staff written volume, "The Photography of Colored Objects," which in its fourteenth edition is brought up to date with latest developments in color research, theory and practice. The chapters on filters are particularly worth while.



THAT'S where Agfa's two great speed films come to the rescue of the cameraman.

For Agfa Ultra-Speed Pan and Agfa Supreme have actually achieved the "impossible" in high-speed emulsions! Agfa Ultra-Speed Pan is the fastest 35mm. film manufactured—Agfa Supreme only slightly slower.

Both of these films disprove the old axiom that speed could be gained only at the sacrifice of other qualities. Agfa Supreme—despite its astonishing speed—is actually better in grain size, color balance and gradation than slower films.

With these two great films, the whole scope of cine-photography is being widened. If you haven't tried them—do so at once. You'll find out why they won the 1937 award of the Academy of Motion Picture Arts and Sciences! Made by Agfa Ansco Corporation in Binghamton, N. Y.

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A JOURNAL OF MOTION PICTURE ARTS AND CRAFTS

CLOSE-UPS

(Our Close-ups this month are devoted to Leon Shamroy, veteran ace cameramen, vicepresident of Local 659, IATSE and recently appointed by the executive board as chairman of Local 659's committee in charge of International Photographer.—Ed.)

WE STARTED out last month to line up some information from and about Leon Shamroy, longtime ace cameraman, who was recently appointed by the executive board of Local 659 as chairman of the committee which will guide the destinies of INTERNATIONAL PHO-TOGRAPHER during the coming year. The first pleasant surprise we received was the information that Shamroy stands an excel lent chance of capturing the 1938 Academy annual award for outstanding cinematography. Talking to Russell Birdwell, able publicist of the Selznick organization, we learned that Shamroy's camera work on "The Young in Heart," recently released Selznick pictures featuring Janet Gaynor, Douglas Fairbanks, Jr. and Paulette Goddard is developing strong support as an awards candidate; and this opinion was confirmed by a number of technicians with whom we talked.

Shamroy is a great believer in fitting photography to the mood of a story and of extending the fullest cooperation to the director and writers in fitting the photographic effects and composition into the varying moods of individual scenes. Technicians who have seen the picture state that "Young in Heart" is a remarkably consistent achievement in this direction.

"Photography, like everything else in the complicated industry-art of motion pictures, must have its compromises to get out of the realm of the empirical and reach the practical result of bringing successful entertainment to theatre audiences." Shamroy says, in expressing his working philosophy. "The cameramen must strike a compromise between the aims and intents and of the producer, the director, the writers, the players, the laboratory that must process the film, general good taste and his own personal pet ideas.

"Just as in the world at large under our complicated industrial civilizations, the big problem today is to work out a system of compromise and cooperation, so in the motion picture industry, which like all great



Leon Shamroy, vice-president of Local 659, IATSE, recently appointed chairman of International Photographer magazine committee.

arts, reflects culturally the mood and spirit of the times, cooperation is the prime essential. Jealousies, petty temperament, and "dictatorial" whims must be subordinated to the general good.

"Reflecting the spirit of Local 659, we are trying to do our bit in that direction through INTERNATIONAL PHOTOGRAPHER, which avoids all controversy and bickering in favor of constructive cooperative presentation of

the news of technical progress. We want every sincere worker in the industry to feel that International Photographer is interested solely in the advancement of motion picture technical methods in cooperation with the artistic and business elements. And I am sure that every member of Local 659, and of the sister studio locals of the IATSE, are 100 percent behind the executive board, the mag azine committee, and the editors of International contents.

NATIONAL PHOTOGRAPHER for the continuation of these policies during 1939."

Like many another successful Hollywood technician, Shamroy started out with engineering as his goal and no thought of the picture business. Influenced by his uncle, Nickolas J. Shamroy, well-known to pioneers of the aviation industry for his contributions to the first air-cooled motor, developed by Charles H. Lawrence, his studies at New York City College, Columbia University and Cooper Union were bent along the lines of mechanical design; and after leaving school, he took an opportunity to work for the Worthington Pump company, having been selected as one of a small group of students to be trained by the organization.

However, a trip to Hollywood to visit relatives in the film capitol diverted him for his original aim and after several years of practical shop experience, he found himself working in the Paramount lab. He later worked at Fox and finally became assistant to a number of the ace photographers from 1921 to 1925 during the "golden age" of silent pictures. From laboratory to assistant, Shamroy acquired a complete practical working knowledge of the many technical details that are so important in photography.

He loaded cameras, worked on their repair, checked lenses, recorded footage, and per-

formed other odd jobs. "It was then possible," Shamroy recalls, "for the cameramen to do more experimenting than today. In fact, constant experiment and study was vital, for there were not available the many lenses, lights and special emulsions of today. Effects had to be obtained by manipulations that now seem archaic. This made lots of work for the assistants, and gave them the finest kind of training. I doubt that training of this kind is possible now, unless the ambitious assistant rigs up his own laboratory and invents his own course of study."

In 1925, Shamroy joined Abe Scholtz in the organization of the well-remembered Chester Bennett laboratory, which later was absorbed by Consolidated. Later he became operative cameramen and stillman for Hugo Ballin; was with Dave Abel at Warners for several years; and finally became a first cameraman on Charles Hutchison's serials and stunt picture for Pathe.

Shamroy's emergence from the rank and file of photographic technicians traces to his association with Paul Fejos as co-producer of "The Last Moment," an experimental feature film that had a revolutionary effect on motion picture technique. It was a silent picture without sub-titles, featuring montages, unusual camera effects in story telling. It won the Gold Medal of the National

Board of Review and ranks as one of the outstanding experimental works of film history.

After "The Last Moment" Shamroy was associated with Robert J. Flaherty in making a documentary film of the Pueblo Indians of the Southwest; and later travelled extensively photographing throughout the ancient world and the Orient for the Huntington

Ethnological Expedition.

Upon his return to Hollywood in 1932, he was signed to a long term contract by B. P. Schulberg and since that time has been photographing a succession of outstanding pictures. Among these will be remembered: "Jennie Gerhardt," "Three Cornered Moon," "Private Worlds," "You Only Live Once," "Mary Burns, Fugitive" and "The Young in Heart." He has just completed "Made for Each Other," starring Carole Lombard and James Stewart, also for Selznick. Shamroy now is beginning a new term contract at 20th Century-Fox, where his first assignment will be "Alexander Graham Bell."

In 1932, Shamroy was associate director in the Ben Hecht-Charles McArthur production unit for Paramount release and his recent pictures have been photographed for such top directors as Fritz Lang, William K. Howard, Wesley Ruggles, Gregory La Cava, Richard Wallace and John Cromwell.



HOLLYWOOD PRESS PHOTOGRAPHERS in a hilarious mood at their recent annual dinner meeting at the Paris lnn in Los Angeles. Elected president to succeed founder-president. George Watson of Acme-NEA, was George Reineking, manager of the Los Angeles Bureau of International News, The organization, which is non-political, eschews labor matters and devotes itself to building the prestige of newspaper photographers, exchanging valuable ideas and has a program of social events, is composed of newspaper, magazine.

syndicate and studio photographers. In the organization from the studio and magazine field are a number of members of Local 659, IATSE. Present membership is over 40, while the rapidly growing organization expects to take in several dozen more to round out the representative photographers in the field. Watch for news of the Hollywood Press Photographers and valuable exchange of ideas on photography and helpful devices between the news and studio photographers in forthcoming issues of International Photographer.

news of the month

Color Progress Dominates 1939 Technical Horizon

Greatest era of feature production in color due; experts step up research programs; strong financial backing available for quality-quantity laboratory release print service; Technicolor, Cinecolor, Telco leaders in print service expansion plans.

By Ed Gibbons.

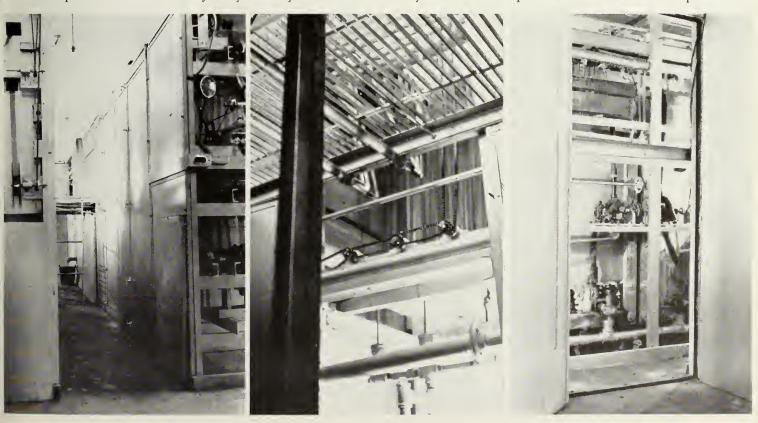
THE MOST IMPORTANT technical development in the professional motion picture sphere during 1939 appears at this writing to be in the field of color. This is so, not only because a strong trend toward more color is already showing its effect in production schedules, but also because the showmanship importance of color during the coming year, will transcend technical progress in other phases, no matter if they be equally impressive as engineering and research achievements.

The what, where, why, who and when of this progress is a serial story that will require more space than this present article. Somewhat optimistically we last month announced that we would follow our December roundup on television with a January

roundup on color. The much wider experimental activity in color, coupled with its possibilities for more immediate practical application present a much greater field of factual and speculative reporting than did television. In delving into the field we came up with a program of news coverage on color that will carry INTERNATIONAL PHOTOGRAPHER through 1939 with a thorough series of articles on all phases of the subject. Cooperation toward this program has been assured by the important workers in the field from the experts of the color companies to the rank and file technicians of Local 659 and our affiliated IATSE motion picture technicians locals in Hollywood.

"Believe it or not," there are approximately 85 different color systems now in process of experiment, test and photography or more or less practical operation. Color is being approached from many slants and technical springboards. Many are similar, or fall into family groupings, headed of course, by the Technicolor, imbibition process, conventional bi-pack (with many different modifications) and the triple-emulsion-monopack systems such as Kodachrome and Agfacolor, which spring from the Fisher patents.

However, and most important, color, when considered from the practical aspects of motion picture production, today is not an inventive promotion, but a laboratory service. The big demand of major motion picture producers, their independent competitors, and the commercial producers of



Three views of the Telco color lab in Hollywood, (Page 10, Column 2). Left: start of negative printer and finish of positive color machine; Center: shooting up at one of the many units of color system, through which film passes in one continuous operation;

Right: each individual unit of the color operation described in accompanying story has individual temperature control and units are sealed and insulated from outside influence when in operation.

educational and sales promotional films whether 35 mm or sub-standard, is for efficient, dependable laboratory service; which means that somebody has to invest a sizeable array of folding money in machines and equipment. That capital is ready and willing to produce the folding money is obvious. Such capital is both inside and outside the picture industry. It has already invested in Technicolor, Cinecolor and Telco to an extent far beyond the experimental stage. Technicolor, of course, is the giant of color, holding undisputed leadership, while Cinecolor and Telco are building plants—for laboratory service.

The service trio mentioned all have big plants for 1939, but when you mention them you have told the story of color laboratory service. It would be unfair to dismiss all other color systems and services in one sweep, for most informed technicians know that experiments are being conducted secretly on most every major studio lot, while there are many organizations prepared to process color film in comparatively small quantity. Some or all of these many color processes may or may not have strong financial backing, but to date that backing has not expressed itself in terms of laboratory service equipment investment on a scale comparable with Technicolor, Cinecolor and Telco. It is our intention to present month by month the factual news of the technical and service progress of these other color systems. For the present a peek at the obvious statistics involved will clearly explain why the three leaders are cited as standouts.

It is estimated that the motion picture industry's present release print output from all our Hollywood, New York and Chicago film labs is somewhere around 6,000,000 feet per day. Hitting this pace, the industry is taking care of what under present sales and distribution methods is normal service. Were all the expansion plans of the abovementioned color service trio rushed into completion within the next month, it is doubtful whether there would be available in the entire country equipment and trained personnel to handle 5,000,000 feet per week. And into this hypothetical situation must be injected the fact that Technicolor, in cooperation with Eastman Kodak researchers is working intensively on a program for radical changes and improvements in its system and service, hence, hardly would order further expansion until present methods definitely have given way to the new.

The color leaders are also bending strongly toward greater economy in production to bring costs more within those of black-and-white. That should intensify color production. But even today, with color still not perfected and costs not what they might be, there is a demand for color laboratory service that far exceeds the present supply. In fact, the experts of the various companies state "off the record" that they believe there is room for three, four or more new color systems that can offer laboratory processing service that is speedy and dependable.

That is the situation as 1939 swings

under way. Color is headed for its biggest year. Radical improvements in actual color photography technique, keener study by producers, artists and technicians who have not yet used color; important improvements in efficiency and economy of operation in color production; continued excellent cooperation by the lighting manufacturing organizations, and intensive work by the emulsion manufacturers to produce stocks of high quality for color (particularly in radical improvement of bi-pack) are among the trends foreseen. Entirely new and different color systems may be unveiled by research-

ers; and greatly changed modifications of present known systems are expected. Big news is expected soon from Eastman on Kodachrome and Agfa Ansco on Agfacolor.

Behind this thought of "great expectations" lies the solid enthusiasm of an increasingly color conscious public, which is being sold more and more on color—natural color. Fully cognizant of public demand is a ready and willing capital that will pour cash money into color systems or services that can deliver the goods in practical consistent service of quality release prints.

Telco Bids for Color Recognition

Radical new system of processing bi-pack for natural color effects with speed and economy put to severe test in first full length Western feature soon to be previewed.

AFTER FOUR YEARS of under-cover experimentation with a radically new approach to 35 mm feature calibre color, using bi-pack negative, Telco Corporation late last month announced plans for an expenditure of approximately \$500,000 in the near future on a Hollywood laboratory plant. The announcement came simultaneously with the completion of a full length production, made without publicity fanfare or advance ballyhoo, with the idea of giving Telco's color a thoroughly practical test before the entire motion picture industry. The picture, "The Lure of the Wastelands," is new in the final editing stages and a major release is likely.

The new color process, technical details of which are first published herewith exclusively in International Photographer, was invented and patented by Bob Hoyt, former newsreel cameraman, and Leon Ungar. Principal claims made for it are: economy in production, with an estimated 10 per cent greater than black-and-white; remarkable depth of field; close approximation to real natural colors as seen by the human eye; rapid, accurately controlled processing; use of virtually entire standard black-and-white equipment from makeup to lighting; and unusually long life of release prints.

Hoyt and Ungar got into color more than four years ago, working with lens systems; and attracted considerable attention with their special coverage of the Texas Centennial for Universal News in 1936. They soon dropped the complicated and expensive lens method in favor of their present system, which depends entirely upon the laboratory processing of specially printed positives from any good quality, properly exposed bi-pack.

A year ago, with adequate financial backing Hoyt and Ungar built and equipped their own plant to complete experiments on their finally arrived at system. Pattern-

ing after an experimental model machine, which they had built in Brooklyn, N. Y. (illustrated on Page 11) they installed and experimented with a complete laboratory unit, which now has a daily capacity of 15,000 feet of negative and approximately the same footage of positive.

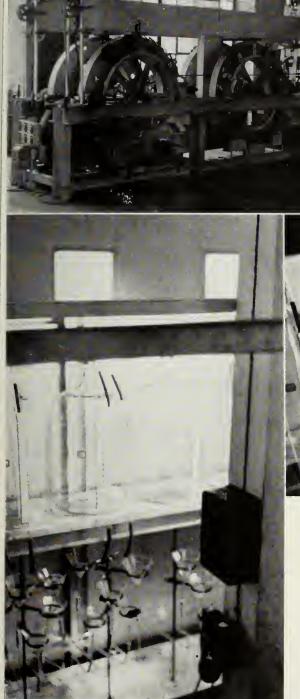
This unit, now perfected from every angle of operation, will be the model of the units to be installed in Telco's contemplated new laboratory. There will be ten units, each with a capacity of 50,000 feet per day and provisions will be made for addition of more units. Illustrations on Page 9 show the compact layout at the experimental plant on La Brea Avenue in Hollywood.

During the experimental period, Hoyt and Ungar surrounded themselves with an organization of two dozen workers, who have been thoroughly familiarized with the Telco system since its inception. Ace of the staff is its chief chemist, Dr. Al Feidler, well-known to veteran industry technicians, who remember the old Empire lab.

Dr. Feidler, graduate of Columbia University and University of Berlin, and a veteran practical chemist, is credited by Hoyt and Ungar with important contributions to the operation of their experimental lab.

Telco's system is a new approach to bipack based upon the well-known principle that the panchromatic part of bi-pack is sensitive to the color spectrum only from the central yellow through the reds; while the ortho part is blind to that end, and sensitive from yellow, through blue to the purples at the other end; plus the fact that these separate halves of the bi-pack record are sensitive to the spectrum halves described so that they record such values in black and white on the film.

Any good bi-pack negative—properly exposed with due regard for color—is taken into the Telco plant and first thoroughly







Top: Telco's original machine for swelling, application of filter coatings and buffing process, which was built in Brooklyn; and now is setup at Hollywood plant for exhibition, having served its usefulness as an experimental model; Bottom: two views of the central chemical control room of the compact Telco color processing laboratory in Hollywood. All chemicals used in processing are prepared in standard quantities in five-gallon jugs, and from this central room, they go out under controlled temperature conditions to the various units of the processing system through a network of glass tubing.

sample tested. Then the negative is developed with the sound track and photographic record in black-and-white. The positives are printed on a "duplitized" stock, of the type available from several emulsion manufacturers. This stock, of course, has an emulsion on one side which takes the panchromatic exposure and an emulsion on the reverse that takes the ortho exposure.

Figure 1 shows the typical "duplitized" positive stock in cross-section after printing. From then on Telco color is produced on

the positive photographic record, leaving the black-and-white sound track intact, in one single processing job, which is quite technically complicated, despite its simplicity and speed in actual operation.

The illustrations on Page 9 show the neatness and compactness of the Telco processing unit as developed at the company's Hollywood experimental plant. Positive stock goes in one end of the neatly covered machines and comes out after numerous changes and special operations at the other end, ready for immediate projection.

Telco's processing depends upon a completely controlled swelling of the silver image according to the gradations of exposure and the filling in of the crevices in the swelling with a gelatin filter, plus buffing this filter down to exact alignment with the top of the swollen image; then re-swelling the uncoated top of the image and filling in with a second perfectly buffed filter layer. This operation is performed on both sides of the duplitized stock.

As illustrated in the accompanying diagrams on Page 12, the Telco process, reduced to simple terms, works as follows:

In Figure 2 we see what happens in the first step—swelling the film. The blacks of the positive retain their original height at exposure, while the solid whites are swollen out considerably. Along the left side of the diagram we see a conventionalized depiction of the way the various gradations of the black-and-white image are swollen out in varying degrees between the flat blacks and the greatly raised whites—according to the degree of grey scale record they received in recording the actual image.

The second step, shown in *Figure 3*, shows the filling in of the crevices with the special gelatin filter; with a red filter for the

Positive from Pan Emulsion FILM BASE Positive from Ortho Emulsion

FIGURE 1. Duplitized positive stock after printing and development, with Pan record on front side of film base; Ortho record on rear side.

panchromatic or red-sensitive emulsion; and with a blue filter for the ortho or blue-sensitive emulsion. Note that the blacks are covered with the heaviest amount of filter, the whites with none at all.

Third step, shown in *Figure 4*, finds the high whites swollen again, while the superimposed filter layers are undisturbed. The whites corresponding with the yellow center of the color spectrum, have tinier crevices than those of the grey scale photo-

sible a duplication of the real colors seen by the human eye, when the film is projected.

Most bi-pack processing depends upon dyeing or toning the pan side in some orange-red combinations and the ortho side in some blue-green combination; and in fact, Kodachrome and Agfacolor (see Int. Photog., April, Sept., 1937) with their triple emulsion on a single base, use in their final processing dyes that give yellow,

human eye every-day. This latter effect is the general practice in all color systems of any prominence in commercial activity today, and it also holds sway in the printing industry. In fact, optical experts state that to this fancy for high-powered color effects can be attributed the complaints of many persons that color pictures cause eye-strain and headache.

There are complicated scientific explanations as to the effect of the pull of strong primary colors and brilliant hues upon the eye. Physics students are familiar with experiments in this direction, some of them of a surprising nature.

None of the Telco viewed by this writer produced any eye-strain, and in fact, the color is so radically different from what we have seen from all other sources to date, that it takes considerable time to become accustomed to it, for the reason that it is

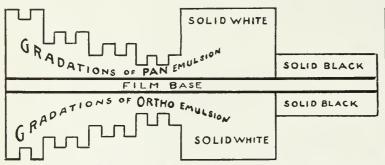


FIGURE 2. Developed positive is swollen through special process so that blacks remain as in original developed and printed state, whites are swollen to highest point and gradations from black to white are swollen accordingly.

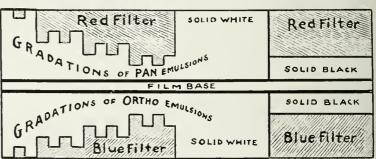


FIGURE 3. Red gelatin filter is filled in over blacks and gradations of Pan, and Blue gelatin filter over blacks and gradations of Ortho and buffed down so that they are even with the highest points of the whites on both sides of duplitized stock.

graphic record gradations. The film now is ready for the final important step of the processing.

Figure 5 shows the completed Telco color release print, with a yellow filter superimposed into the crevices in the raised white of the panchromatic side; while a green filter has been superimposed on the raised white of the ortho side.

As most technicians know, yellow is the bugaboo of color, since so little of it occurs in the visible color spectrum in proportion to the other colors and hues. Telco goes beyond the three color process to a four-color method, to try and secure a proper three-color effect with as natural as pos-

magenta and blue-green. Telco strives for a combination closer to natural red on one side and natural blue on the other side of the spectrum, while the front yellow filter and rear green filter, through a process of reasoning in color physics, achieve a balancing effect from yellow through the other hues.

An important feature is that Telco can be controlled in a manner greatly similar to color control in the printing industry. The producers can have a pastel effect, running less bright and glaring than in nature; or if preferred, may take the other alternative and produce a stronger and more brilliant effect than is seen by the

so much closer to the colors actually observed in nature, but not usually on film. Beautiful as many color effects produced with other systems may have been, it is conceded by all that they have not and do not present truly natural color. Whether Telco has achieved the technician's dream of natural color—completely devoid of eye-strain—will be proven by time and experiment. But as it stands today, it gets results that are impressively beyond the experimental stage.

The color concern is putting its process to the severest possible test in the forthcoming new production, "The Lure of the Wastelands." This first full-length western

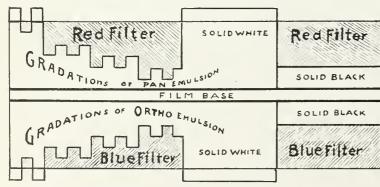


FIGURE 4. High peaks of the whites are treated to second swelling operation, which raises them above the gelatin filters on each side of duplitized stock. This swelling is less than the first.

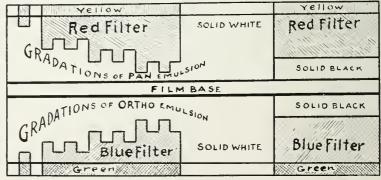


FIGURE 5. Crevices of swollen whites are filled in with Yellow gelatin filter on Pan side and Green gelatin filter on Ortho side and again buffed down to be even with the highest peaks of the second swelling of the whites. Film is ready for projection immediately after coming from color processing machines.

action picture in color was produced by Al Lane under normal independent state right conditions, which taken all-in-all, cannot even come near the production time and care of the lowliest major studio "B" film. No concessions were made to the color in meeting the rapid fire production schedule, which included a location trip to Zion Canyon, Utah. Full union crews were used under regulation conditions as prevail throughout the industry today. The producer and Telco executives estimate an approximate 10 per cent budget up over blackand-white experience for the same type of picture.

The picture was photographed by Francis Corby and James R. Palmer, the latter a member of Local 659, IATSE. Reaction of the photographers, who were highly complimented by Hoyt on the consistent quality of their negative, was that the system has more depth of field than black-and-white, and produces a definite third-dimensional effect. (In scenes viewed by this writer, the depth of field was truly astonishing.) Exposure, they found, called for about 10 per

cent more light than black-and-white and some changes from standard practice, particularly in front lighting. Like all color, exposure latitude was considerably restricted, but when properly exposed, results were invariably satisfactory.

With plans for the new Telco plant nearing completion, Hoyt and Ungar are consulting with representatives of the important emulsion manufacturers on technical suggestions they have developed in their experiments with their color system. These suggestions lie in the realm of improvement and in some instances radical changes in bi-pack emulsion making. Further details of this development will be published in next month's INTERNATIONAL PHOTOGRARAPHER, along with other stories in our program of presenting color progress for 1939.

gram of presenting color progress for 1939.

The Telco system is fully protected by an array of patents, not only affecting the methods and machines described in this article, but also on various off-shoots of the system, some of an interesting and technically radical nature to be discussed in forthcom-

ing issues.

Mickey Rooney in Ten Best

Durward Graybill, Local 659 stillman, captures "Huck Finn" personality of young player who in 1938 jumped to fourth place amongst box-office appeal stars in Hardy series. By Herbert Aller

For several years two youngsters, Shirley Temple and Jane Withers, have ranked among the ten best money making stars of the screen, according to the annual poll of motion picture exhibitors of America, conducted by the Quigley Publications to judge the box office rankings of some 200 top stars and near stars. For 1938 a third juvenile player enters the charmed circle, in the person of young Mickey Rooney, who after playing in more than 50 pictures since his first screen appearance as a tot in 1926, last year took fourth ranking as a drawing power.

The down-to-earth Judge Hardy series, which MGM is producing, was responsible for Mickey's high jump in box office rating; and Mickey, who plays Andy Hardy, now has been entrusted at MGM with the title role in one of America's most popular boy stories, "Huckleberry Finn," by Mark Twain.

That Mickey Rooney will make an ideal prototype of Twain's youthful hero is evident from the excellent selections on Pages 14-15 from the collection of still photographs for MGM's publicity campaign on the production by Durward "Bud" Graybill, stillman member of Local 659, IATSE. Graybill has captured young Rooney's "Puckish" personality with his camera in a manner that not only conveys the spirit of the Mark Twain story but also reflects the photographer's mastery of his medium.

The first ten box office appeal stars as rated by the Quigley Publications were:

Shirley Temple, Clark Gable, Sonja Henie, Mickey Rooney, Spencer Tracy, Robert Taylor, Myrna Loy, Jane Withers, Alice Faye and Tyrone Power.

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Eight character studies of Mickey Rooney, young player who sky-rocketed to fourth place as box office draw star last year. (Story on



Page 13, Column 2). Shots are from MGM's "Huckleberry Finn," by Durward "Bud" Graybill, stillman member of Local 659, 1ATSE.

Wanger Pic Important for Process Work

"Tradewinds" an outstanding film of 1938 as first production with rear projection as an integral part of production program; opens new fields of story material; release timely as Academy Research Council report on rear projection technique and standards due.

ONE OF THE MOST important productions of 1938 was Walter Wanger's "Tradewinds," not so much for its excellent values as screen entertainment as for its technical background. For "Tradewinds" is the outstanding example in the motion picture industry to date of the advance planning of a story for film production to take full advantage of the recent progress made in rear projection technique by the small army of enthusiastic workers in special effects photography.

of a story for film production to take full advantage of the recent progress made in rear projection technique by the small army of enthusiastic workers in special effects photography.

The history of rear projection has been one of constant pioneering (See Int. Photog., April, 1938, Process) and every day's assignment for the special effects and process technicians brings new opportunities for pioneering.

new opportunities for pioneering.
"Tradewinds" was born when Director Tay
Garnett decided to take a world cruise and mix
business with pleasure by photographing background action for several stories he had in mind.
Garnett photographed some 40,000 feet of usable

foreign background scenes, mostly Asiatic locations with romantic and dramatic associations to American audiences, such as Honolulu, Shanghai, Saigon, Bombay, Singapore, etc. James M. Shackleford photographed the scenes on the trip.

In the final production, as previewed to an appreciative audience late last month, there were some 3,000 feet of processed background in the picture. Out of 79 sets used for the production, 32 were designed for process work by the art director, Alexander Toluboff.

For his first story in this experimental program with process effects as a fundamental backbone of the production program, Garnett chose a story with a pattern that the motion picture can do better than any other entertainment medium—the chase.

"Tradewinds" is one long chase from start to finish, complicated with a strong romantic conflict and a minor element of crime solution, which is brought in to climax the yarn. In the story, Joan Bennett, a suspected murderess, is hounded across the Pacific from one romantic spot to another by Fredric March, playing a detective on special assignment from the San Francisco police. In a fast-moving story against a continuous procession of new locales, a romantic involvement is developed between the pair, leading to a dramatic climax back in San Francisco, where March solves the murder, and wins Miss Bennett. Ann Sothern and Ralph Bellamy excellently support the star team.

It is understood that the production cost of the Wanger picture ran close to \$750,000, yet the same picture—produced without background projection technique, with the alternative of either sending a con-pany on an extensive location or reproducing the settings in Hollywood—would have cost up to as much as \$2,500,000. General opinion following the preview was that









All illustrations accompanying this story have rear projection backgrounds. Stills by Ned Scott, member of Local 659, LATSE.

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Exclusive World Distributors of Taylor-Hobson Cooke Ciné Lenses 1848 Larchmont Avenue, Chicago New York: 30 Rockefeller Plaza Hollywood: 716 N. LaBrea Ave. London: 13-14 Great Castle St. the Wanger-Garnett venture opens the path for much greater attention to background projection.

The "Tradewinds" preview was timely from another technical slant, because it came just as the Academy Research Council was in the final stages of completing its report on rear projection, which is expected to set new and valuable minimum standards in the field upon its release next month. A number of manufacturers are withholding the placing of new and improved equipment on the market pending the release of the report.

Membership of the process and special effects committee, which is the largest group functioning on behalf of the Research Council and contains representation from all of the studios as well as all of the companies manufacturing and developing all types of process projection equipment, consists of:

Farciot Edouart, Chairman, F. R. Abbott, J. A. Ball, H. C. Bishop, Jack Burrows, Merle Chamberlain, F. C. Coates, Jack Cosgrove, Roy Davidson, Ralph Densmore, Arthur de Stefano, E. H. Fender, Arnold Gillespie, Ralph Hammeras, Charles Handley, Frank Harris, Winton Hoch, Stanley Horsley, Fred Jackman, Wallace Kelley, H. F. Koenckamp, Grover Laube, Robert Layton, William Miller, Donald Murphy, Emil Oster, H. W. Remershied, Elmer Richardson, W. H. Robinson, Jr., William Rudolph, Roy Seawright, W. B. Slaughter, Jr., Glen Slipper, Otto Staplefeld, Herb Starke, George Teague, William Thomas, Melvin Thorsen, Howard R. Trissel, Glen Wahl, Vernon Walker, George H. Worrall, Frank Young, Arthur Zaugg and A. C. Zoulis.

Up to the present time, the industry's attitude toward rear projection and similar special effects has been secretive and considerably on the far side from cooperation. Not since the Acadamy's symposium on special effects in 1931, has there been any general cooperative working together of the experts in the field up to the Research Council's current study. The general agreement by studio experts on minimum requirements in rear projection equipment is expected to be an important step forward, since it will not only guide the manufacturers toward close cooperation with studio technicians, but also will open the way for further general discussion and solution of problems in this field. The release of "Tradewinds" adds to the technical note of progress the indispensable overtone of box office value.

Process photography on "Tradewinds" was handled ably by Ray Binger. Accompanying illustrations of various highlight scenes from the picture, in which process was used, are from the still series photographed for the publicity campaign by Ned Scott, stillman member of Local 659, IATSE. Scott worked under the handicap of having to snap his stills in synchronization with the shutter timing of the rear projection; and his job was made extremely difficult because frequently figures in the projected background would walk forward and out of focus. One of the most spectacular scenes in the picture, a perfectly matched studio action against the process background of 50,000 people at the Singapore race track, is missing from the still series because of such technical handicaps.

Studio Club News

Plans for 1939 include regular rotating print exhibit; news of elections; photographic outing planned for February; 1939 Fair exhibits. By George M. Haines.

INTER-STUDIO CAMERA CLUB greets the new year with a program of interesting activities and events that should not only put the joint organization ahead, but also benefit the individual clubs. Of interest to club members will be a new rotating system for exchange of prints, to be developed as regular procedure during 1939. From three to five outstanding prints from each club will be selected to form the exhibit, and there will also be special exhibits in various classifications. Details will be sent to club presidents later this month.

In this connection, it might be noted that clubs having difficulties in classifying prints should contact Douglas Rudd, president of the Paramount club, for an outline of his splendid system, which has worked very successfully for that group.

News of elections received to date (there will be more next month) are as follows:

Paramount: Douglas Rudd, president; Virginia Printzlau, secretary; Lorin Grignon, secretary; United Artists: Harry Sunby, president; John Wentworth, secretary; 20th Century-Fox: George M. Haines, president; Woody Lagune, secretary.

The Paramount studio club will hold its annual salon exhibit on January 12. Try to attend the exhibit of this very progressive club, which always produces much that is worth while.

Columbia's club is making consistent progress and reports that officers were reelected: Paul Murphy, president; and Howard Edgar, secretary. An exhibit of Columbia club prints is now being shown at Hal Harm's Studio at Photo Supply Company.

Blank forms will soon be sent to all the clubs so they may participate in 1939's big World's Fairs at San Francisco and New York.

Plans are now being made for a photographic outing during February under Inter-Studio Camera Club auspices. Details will be mailed to club presidents so that those interested will have plenty of time to make arrangements.

Kornman to S. A.

TONY KORNMAN, veteran cameraman, who has been conducting a free-lance equipment brokerage business during the past year, sails January 14 for Buenos Aires to act as director of photography for Estudios San Miguel. Kornman will also assist in the installation of a considerable amount of modern equipment that the South American organization has purchased from Duplex.

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Latest portrait of DUARC, the sensational twin-are endurance champion which today added the anti-flicker championship to its laurels. The first twin champion twin are has in the short period since its introduction received a tremendons ovation in all studios. tremendons ovation in all studios. A third championship for DUARC seems in prospect, for it is running a neck-and-neck race with Walt Disney's 'Dopey' as the year's outstanding silent performer.

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DUAL CARBON FEED SYSTEM GETS PRAISE

Hailing DUARCS famous dual carbon feed as the finest yet seen in any twip are broadside, experts from the Society for the Prevention of Cruelty to Ares credited DUARC as the first twin to treat earbons

"Anyone who knows anything about the care and feeding of arcs," said an S.P.C.A. spokesman. "knows that they demand individnal treatment. The old-fashioned practice of keeping both ares of a twin-are voked together like oven. forcing them to feed as a puit, is onjustiliable brutality. Often one are will burn its carbons faster than its companion; with the feed governed by electrical averages, one are is starved and the other stuffed. No wonder the poor things flicker and change color!

"DUARC, on the other hand, feeds each are independently, at a rate governed by its individual needs. Such humane treatment is naturally rewarded with flicker-free light of uniform color.

"We are glad to endorse DUARC as the first twin are to treat its carbons right!"

DUARC HAILED AS SECRET OF FLICKER-FREE

ARC LIGHTING

Following hard upon the recordsmashing 2 hr. 223 min, non-stop run which made DUARC the acknowledged endurance champion of twin ares, the new twin is receiving additional plandits as the onique flicker-free twin are illuminant of the industry.

Comparative tests before scientific investigators and before practical technicians on major-studio sets prove DUARC the one truly tlickerless lamp of its kind, making it a two-way champion. There have been innumerable twin ares since the movies started using lights, but never before any capable of winning and holding a twin championship as does DUARC.

Students of arc-ology attribute this record performance to the fact that DUARC alone has progressively abandoned outmoded methods and applied modern scientific design to modern problems. DUARC, they say, is a real champion-and like all champions, cannot be imitated.



Backlot Handbook

Lighting equipment, power connections and handy accessories. By George M. Haines, Local 37, IATSE

OUR LATEST batch of technical gadgets in the Studio Mechanic's Handbook, intended for eventual publication as the industry's first practical handbook of the many odd and unusual items used in motion picture production, deals with lights and power. Don't forget that we are counting on readers of INTERNATIONAL PHOTOGRAPHER to supply us with suggestions and comment on this series. In the near future, details of a plan to expand and expedite the coverage of this vast field will be sent to department heads and key technicians.

In the accompanying illustrations on this page we see at the top two very handy items developed at the 20th Century-Fox lot. Left: a neat open arc protective shield; and Right: the streamlined portable work-box.

Next, at the Right, we have the commonly used "A" splicer or connecting box, which is used for bringing in juice from the main line and distributing it to the various lighting units. At Left is the 6-hole plugging box, which is clamped to the "A" box at the other end from that shown in the illustration. Below the 6-Hole box are seen the head extensions which are run out to the individual lamp units.

Finally, we show some of the modern lamps. Above at the Right is a 100-Amp Fresnel type Arc, mounted on rolling tripod. At Lower Left is a "36" Arc, mounted on portbale wooden dolly; while at the lower Right, we have a trio of 100-Amp Fresnel Arcs mounted on a portable metal dolly. This later item is quite widely used at the 20th Century-Fox lot; and in an early issue we will present a complete layout of their metal type grip equipment.

Alley Back from Tour

NORMAN ALLEY, veteran newsreel cameraman member of Local 659, IATSE, got back in time to cover the Duke-USC New Year's Day Rose Bowl classic after a leave of absence from hsi post as cameramensupervisor for Universal News in the Southern California area. Alley lectured in many key cities and at universities and colleges last fall on photography and newsreel experiences. He delivered three lectures at Columbia University, which has extensive courses on motion picture technique. Proving that there really is "always something new" in a newsreeler's life, it was the first time in his more than 20 years behind the lens that Alley had photographed a Rose Bowl game.



TECHNICAL ARTICLES

LAST MONTH the following patents of interest to readers of International Photog-RAPHER were issued by the U. S. Patent Office. These selections and brief descriptions of new patents were prepared by Robert W. Fulwider, well-known Los Angeles attorney, specializing in patent and trade mark counsel.

No. 2,134,916—FILM PROJECTING MECHANISM. Herbert Griffin and Albert Kindelmann, assignors to International Projector Corp., N. Y. Application Oct. 31, 1935. 4 Claims.

An intermittent motion device which forms the loop for the projector and is provided with holding means to stop the film if the loop is lost.

No. 2,135,026—Moving Picture Camera. Helmut Becker, Germany, assignor to Ernst Leitz G. m. b. H., Wetzlar, Germany. Application Sept. 16, 1936. In Germany Oct. 10, 1935. 2 Claims.

A motion picture camera designed to receive reels holding various lengths of film.

No. 2,135,049—Apparatus for Stereoscopic CINEMATOGRAPHY. Ted Maxwell Harvey, England. Application March 10, 1937. In Great Britain Oct. 2, 1936. 4 Claims.

A device for taking stereoscopic motion pictures, which has a rotating housing carrying a pair of angularly positioned mirrors directing the image of the scene being photographed to the lens.

No. 2,135,396—OPTICAL REPRODUCTION OF LEN-TICULATED OR GOFFERED FILMS. Anne Henri Jacques de Lassus Saint Genies, Versailles, France. Application June 25, 1936. In France June 27, 1935. 13 Claims.

A method of copying lenticular films which makes use of a pair of shutters having narrow parallel slots parallel the lenticulations of the original film.

No. 2,135,500—FILM HANDLING APPARATUS. Warren Dunham Foster, Washington Township, Bergen County, N. J., assignor to Kinatome Patents Corp., Ridgewood, N. J. Original application May 26, 1932. Patent No. 1,944,029, dated Jan. 16, 1934. Divided and this application Jan. 15, 1934. 20 Claims.

A device for pre-warming the air blown against

a projector lamp.

No. 2,135,684—Apparatus for Eliminating BLOOPS IN SPLICED SOUND-ON FILM MOVING PICTURE POSITIVE FILMS. Thomas J. Walsh, West Hempstead, and John Antofilli, Astoria, N. Y. Application March 6, 1936. 17 Claims. A punch for cutting and placing a bloop eliminating patch upon a spliced, sound-on-film positive film

No. 2,135,993—Interchangeable Shutter As-SEMBLAGE FOR MOTON PICTURE APPARATUS. Raymond W. Wengel, assignor to Eastman Kodak Co. Application August 11, 1936. 16

A motion picture apparatus having provision to make use of unit interchangeable shutter assemblages.

No. 2,135,996—Ventilating of Lamp Houses. Donald L. Wood, Rochester, N. Y., assignor by mesne assignments to Eastman Kodak Co. Application August 11, 1936. 4 Claims.

A motion picture projector having the lamp burning with its base up, and attached to the door to facilitate replacement.

No. 2,136,143—SOUND FILM. Walter Michaelis, assignor to Bela Gaspar, Brussels, Belgium. Application April 2, 1936. In Germany April

2, 1935. 6 Claims.
A colored motion picture sound film having separate colored photographic layers with separate positive and negative aligned sound tracks.

No. 2,136,322—Fire Protecting Device with FILM PROJECTORS IN CINEMAS. Peter Sebastiani, Germany. Application Oct. 14, 1936. In Germany Nov. 11, 1935. 9 Claims. An electric device for automatically operating a

fire shutter in a projector, operated by an electric circuit which actuates the device when an alternating current falls below a pre-determined frequency which is determined by the speed of

No. 2,136,327 — Rrproduction of Goffered FILMS. Anne Henri Jacques de Lassus St. Genies, Versailles, France. Application June 8, 1937. In France June 10, 1936. 16 Claims.

A method of copying goffered films, using movable screens having slits to illuminate the film and a movable screen with an aperture having a refractive element in the aperture.

No. 2,136,930—Claw Feed Mechanism for MOTION PICTURE APPARATUS Hermann Friedrich Albrecht, Germany, and Ledie Ernest Thomas Branch, England, assignors to East-man Kodak Co. Application Sept. 10, 1935. In Great Britain August 2, 1935. 6 Claims.

A claw-like intermittent motion in which one pair of claws advance the film half a frame, and a second pair of claws advance it the remaining half frame.

No. 2,137,267—Sound Record Process. Aloysius J. Cawley, Pittston, Pa. Application June 14, 1929. Renewed April 15, 1938. 3 Claims. A sound recording system using a light source supplied with sound modulated current and a variable slit actuated by the same modulated cur-

No. 2,137,336—Method of Producing Col-ORED COLLOID LAYERS FOR PHOTOGRAPHIC PURPOSES AND MATERIAL THEREFOR. Bela Gaspar, Belgium. Application June 20, 1936. In Germany June 21, 1935. 13 Claims.

A multi-layer film having an emulsion sensitive to one spectral range, and a second nearly colorless emulsion sensitive to a different spectral range on top of the first emulsion.

No. 2,137,570—CAMERA ATTACHMENT. Otto C. Gilmore, Van Nuys, Calif., assignor to Cosmocolor Corp., N. Y. Application Jan. 25, 1936. 5 Claims.

An attachment replacing the lens tube of a camera for taking color pictures, and having an arrangement of prisms and a lens within the attachment.

No. 2,137,785—Color Photography and Cine-MATOGRAPHY. Edgar Sanders-Dolgoruki and John Hubert Reindorp, England, assignors to Truecolour Film Limited, London. Application Oct. 21, 1936. In Great Britain Oct. 9, 1936. 10 Claims.

A method of obtaining differently colored images in two emulsion layers on the same side of a film by developing and fixing both emulsions, and then converting them to different silver salts and then coloring them.

Why Modern Lamps Are Better

Scrupulous attention to details develops steady, efficient illumination as proven by scientific measurements with G-E photometer. By Peter Mole, Mole-Richardson Company.

THE STATEMENT is often made that today's studio lighting equipment is better-more efficient—than that of the past. In many instances, daily performance on the set gives practical proof of this statement. But the matter has generally been allowed to rest there, with the acceptance of the fact. No scientific measurements have been made to prove the point—to show how much better are today's lighting units.

Recently, in the course of routine tests of the Duarc, the new all-purpose twin-arc general lighting unit lately introduced by the Mole-Richardson Company, a series of tests were made in which actual performances of the new unit and of two types of older arc "broadsides" were compared with scientific accuracy.

The three units tested included, in addition to the Duarc, an M-R "Type 29" Side Arc and a typical twin-arc "broadside" of the days before the coming of sound. The Side Arc was developed a scant five years

ago, to meet requirements of the then new three-color Technicolor process. It is a typical representative of conventional current practice. The "broadside" was made not less than fifteen years ago, and represents typical pre-talkie lamp design and performance.

The tests were made by means of a General Electric photoelectric recording photometer. In this device a photoelectric cell of familiar type is coupled to a movable stylus which traces upon a moving roll of paper the curve which represents the performance of the lamp.

Figure 1 shows the curve yielded by the pre-talkie "broadside." It will be noticed that when the arc is first struck, the radiation jumps to a relatively high intensity, reaching a peak after about 30 seconds' burning. After this, the intensity descends rapidly, with frequent and noticeable variations until after about 3½ minutes of burning the lamp is radiating but 1/3 as much light as it did at the start. Then the arc retrims itself, with a consequent increase in intensity. This increase, however, does not regain more than 2/3 of the peak intensity noted when the arc is first struck. From then on, the decline continues until the arc again retrims.

Similar tests, covering a period of an hour's burning, showed an even more marked pattern of variations or flickers. Superimposed on the pattern of short-period variations just mentioned was another pattern of longer periodic variations, occurring at approximately five-minute intervals. At the peaks of these variations, the recording

stylus was thrown completely off the scale. Immediately before the peaks, as the carbons in retrimming were brought together, the intensity dropped to zero. For all practical purposes, the arc went completely out at five-minute intervals.

The curves show that these early lamps had a triple flicker. First there were minor variations of strength at intervals of about two seconds. Next, fluctuations of forty to fifty per cent at three-minute intervals. Third, fluctuations of several hundred per cent at about five-minute intervals. while these lamps might actually burn for

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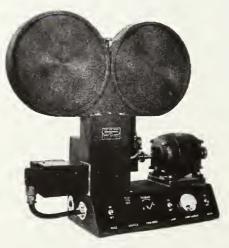
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considerable periods, it was seldom safe to burn them continuously for more than three minutes, or at most, five minutes.

Figure 2 shows the record of a test of one of the more recent Side Arcs. It is easy to see that the characteristic slow decline in intensity, and the longer-period fluctuations which characterized the older arcs have been largely eliminated. Sufficient minor variations or flickers remain, however, to make it clear that with today's highly sensitive films and more uniform processing, even this lamp cannot be considered truly flickerless.

The companion test of the new Duarc is shown in *Figure* 3. From this curve it will be seen that while minor fluctuations still exist in the light-radiation of the new lamp, they average less than 1/6 the magnitude of those of its immediate predecessor, the Side Arc, and less than 1/25 the magnitude of those of the pre-Vitaphone "broadside." The various superimposed flickerpattern of longer period and greater magnitude, evident in the earlier lamps, have

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vanished. For all practical purposes we may count this as an absolutely flickerless arc.

This gratifying confirmation of the general opinion that modern lamps are better than those of the past gives us a measure of how much better they are. At the same time, it raises the question of how and why these improvements were obtained.

In the case of twin-arc general lighting units, the chief cause of the improvement is better knowledge of the behavior of carbon arcs, especially as regards the feeding of the carbons, and the resulting improvements in the arc-feeding mechanisms. Improvements in carbons have also played their part, for which the engineers of the National Carbon Company deserve much credit; but the best carbon will not perform well in a mechanism which feeds the carbons incorrectly.

The early lamps used a simple gravity-magnetic carbon feed, and fed both pairs of carbons simultaneously. This made for mechanical simplicity; but inevitably it would result in feeding one arc of a pair prematurely, while the other's feed might be delayed too long for efficient operation. The feed was of course extremely intermittent, so that the arc-gaps increased sufficiently between feeds to lessen the intensity of the light notably, as the curve showed. The result could not be other than a badly flickering lamp.

The Side Arc of five years ago remedied at least on of these basic faults. Instead of feeding both pairs of carbons together, each pair operated independently. In this way each arc was fed at a rate more closely related to its individual needs. As the curve showed, this eliminated the large-pattern flickerings. But since the feed remained intermittent in nature, there remained con-

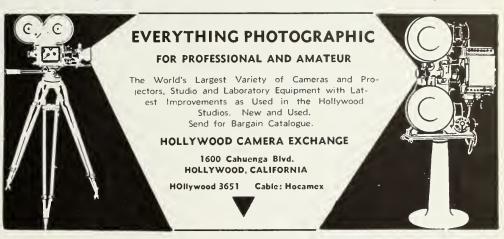
siderably less flicker.

In controlling a twin arc lamp to meet the present-day requirements of a constant spectrum balance and flickerless operation, it is necessary to adhere strictly to the basic principle that each of the arcs must be fed independently in exact accordance with its carbon consumption, and in a manner to maintain within the closest tolerances equal and constant voltage drops in each arc. In the Duarc this principle is complied with by an ingeniously devised feed motor circuit instantly responsive to voltage changes of less than one volt. The motors feeding each trim rotate at an average speed of five revolutions per minute, a speed so slow that it introduces no problem of mechanical noise. The carbons feed continuously rather than intermittently, each trim feeding in exact accordance with its consumption. The result of these improvements are clearly seen in the flickerless curve traced by the Duarc in the test.

It will be seen that these improvements in performance have come less from sweeping innovations in broad aspects of design than from careful attention to details. Scientific measurements of this nature show what can be done to improve performance, after which simple common sense in design usual-

ly makes the improvements possible. As such methods are applied to the analysis of today's best lamps, we may be confident that

tomorrow's lighting units will show even greater improvement than do today's in comparison with those of yesterday.





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Projection Symposium

Article Four: General discussion of amplifiers and associated power supplies for DC from AC sources. By W. S. Thompson, RCA, Hollywood.

Power Supplies

SINCE THE INTRODUCTION of vacuum tube amplifiers into the commercial field some years ago there has been a continued endeavor on the part of engineers to find ways and means for supplying the necessary DC power from AC sources. The most common method of accomplishing this result has been the employment of power supplies consisting essentially of rectifiers and filter circuits. Our further discussion will deal with the rectifiers and the filters separately and will divide power supplies into two general classes, viz., low voltage—high current types ("A" supplies, etc.), and high voltage—low current types ("B" supplies, etc.).

1. Types of Rectifiers

We will briefly define a rectifier as a combination of elements which will pass current in one direction only. This definition does not strictly hold for all commercial rectifiers as we will see later, but will hold for all rectifiers discussed unless otherwise noted.

(a) For "A" Supplies

The hot cathode, gas-filled rectifier known commercially as a Tungar or Rectigon, is a special type of two element vacuum tube. The operation of the ordinary two element vacuum tube as a rectifier is shown schematically by Figure 1 in which "V" is the tube with a filament and plate, "T," a transformer to supply filament current for the tube and to act as a power source, and "R" a load to which it is desired to supply DC.

Whenever the polarity of the voltage developed across the secondary winding of the transformer "T" is such as to make the plate or anode of the rectifier positive with respect to the filament or cathode, electrons will be drawn from the filament to the plate and hence through the load "R." During the half cycle, when the polarity has changed from the above, there will be no current flowing through the tube or through the load "R." The result of the above cycle of events is that a pulsating direct current is set up through the load with a pulse of current flowing every half cycle.

The gas-filled rectifier differs in operation from the above in that the gas within the tube is so heavily bombarded by the electrons that it becomes ionized; and the ionized gas then acts as the principal current carrier. The benefit derived from the ionization of the gas is that the rectifier will pass very heavy currents, up to about 15 amperes, with a very low voltage drop within the tube (6-8 volts).

A special tube of this type contains a small amount of mercury vapor which allows much higher voltages to be developed across the load, but necessitates a warming-up period before the plate voltage may be applied.

A copper-oxide rectifier is used quite often in this type of power supply. The single elements of this type rectifier are copper discs covered with a layer of cuprous-oxide. These discs will pass about five thousand times as much current in one direction as in the other and will pass about two amperes per square inch of disc surface. High voltages and high current outputs are handled by using many discs in a series parallel arrangement.

(b) For "B" Supplies

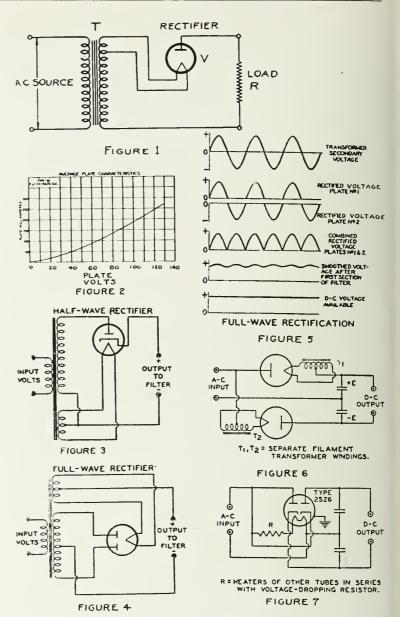
One of the most common rectifiers used for high voltage—low current power supplies is the two-element hot cathode high vacuum tube, usually known as the kenotron or diode previously described. The average characteristic of such a tube is shown by Figure 2, although other tubes are made to rectify voltages as high as 100,000 volts.

The addition of a very small amount of mercury vapor into a kenotron reduces the tube drop to about 15 volts, and hence allows heavier currents to be drawn from these tubes. Commercial tubes of this type will deliver as much as 450 amperes and as high voltages as 15,000 volts.

Another type of rectifier tube which has been used considerably in the past but is not so common now is the cold cathode, or glow tube. When two electrodes are enclosed in a glass envelope filled with a gas-like neon, electrons will be liberated from the cathode when a potential exists between the cathode and the anode. Certain metals such as aluminum liberate electrons much more readily than other metals such as nickel. By constructing a tube with a large aluminum cathode and a small nickel anode and putting an AC potential between the two, we find that more current will flow when the nickel is positive than when the aluminum is positive. This current difference is sufficient to make this type rectifier of commercial importance.

General Types of Rectifier Circuits

In its fundamental form a practical rectifier circuit consists of three parts: (1) the power source (usually a transformer); (2) the rectifier



itself, and (3) a filter circuit to smooth out any AC ripple which comes from the rectifier. In our discussion we will group the transformer and rectifier, and discuss filter circuits separately.

The two fundamental forms of most tube rectifier circuits are shown in Figures 3 and 4. As explained before, in the half-way rectifier current flows through the load only every other half cycle; that is, only when the plate or anode is positive with respect to the filament or cathode. In the case of a full wave rectifier, however, current flows through plate No. 1 when it is positive with respect to the filament and through plate No. 2 when it is positive with respect to the filament, which results in current flowing through the load during every half cycle. This is illustrated by Figure 5.

Figure 6 illustrates a simplified schematic of a rectifier circuit which is used to a great extent in the radio field, and is called a voltage doubler. By voltage doubler is meant that the DC output voltage can be as high as twice the peak value of the AC input voltage. The operation is as follows: Assuming that during one half cycle of the input voltage the upper wire is positive with respect to the lower wire, during this half cycle the top rectifier tube will pass current and charge the top condenser as indicated. When the polarity has reversed, the bottom rectifier tube will pass current and charge the bottom condenser in a similar manner. The result is that since the two condensers are in series there will appear across the output terminals a voltage of 2-E. When the current is drawn by the load this voltage will of course be dropped somewhat, depending upon the magnitude of the load current and the size of the Practice, Radiotrons 25Z5 and 25Z6 are used for this purpose, as illustrated by Figure 7. Other commercial combinations of single and three-phase rectifiers are illustrated by Figure 8, which also shows the DC output voltage for each of these circuits.

The three most generally used types of filters incorporated in power supplies are shown by Figure 9. These are known as the condenser type, the choke—input type, the condenser—input type. The number of sections to be used and the values of the various components depend upon

OPERATION CHARACTERISTICS

FOR CHOKE INPUT, OMIT CI

D-C LOAD MILLIAMPERES

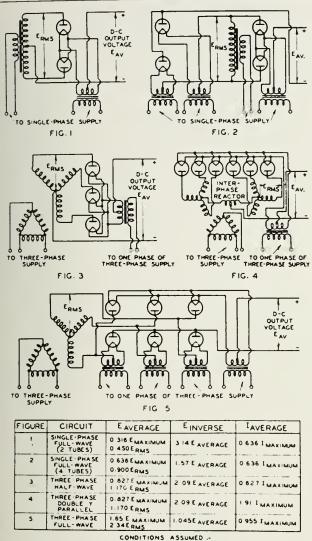
FIGURE 10

- CONDENSER INPUT TO FILTER - CHOKE INPUT TO FILTER - CONDENSER INPUT TO FILTER

FILTER

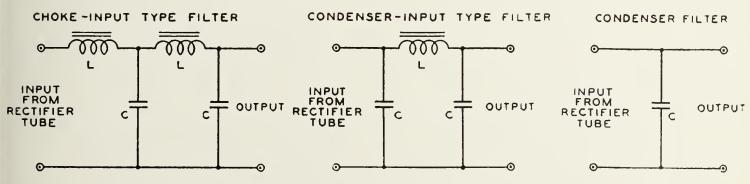
E = 7.5 VOLTS A.C.

HALF-WAVE



(i) SINE WAVE SUPPLY (2) BALANCED PHASE VOLTAGES (3) ZERO TUBE OROP (4) PURE RESISTANCE LOAD (5) NO FILTER USED

FIGURE 8



L = FILTER CHOKE C = FILTER CONDENSER FIGURE 9

the individual power supply with which the rectifier is to be used. Figure 10 shows the voltage regulation curves for two of these types of filters using the tube illustrated by Figure 2 both as a half-way and as a full-way rectifier. It should be noted that for a given available AC voltage the condenser-input type of filter results in a higher DC voltage, but that the choke-input type gives better regulation.

Two examples of typical power supply circuits and their associated amplifiers are shown by Figures 11 and 12. It should be noted that the power supply shown in Figure 11 makes use of two rectifier tubes. The RCA 83 supplies "B" voltage, while the RCA 80 supplies "C" bias voltages for the RCA 3A3 tubes. Another interesting circuit is about in age for the RCA 2A3 tubes. Another interesting circuit is shown in Figure 13 and illustrates a "B" supply which is both line and load regulated; that is, the output voltage is practically constant for any current output from zero to full load, and for any line voltage from 90 to 125 volts.

A good example of an "A" power supply is shown by Figure 14. This power supply makes use of the gas-filled—hot cathode type of rectifier

tubes and is intended to supply the heater current for amplifier tubes used in very low level circuits.

Types of Amplifiers

In general there are two different functions to be performed by amplifiers as applied in the recording and reproducing field. The first of these functions is a matter of pure amplification; that is, when it is connected to a device in which are generated small electrical voltages it should increase the amplitude of these small voltages and deliver across its output terminals an exact but greatly enlarged duplicate of its input voltage. This type is generally known as a voltage amplifier.

The second function that an amplifier must perform might be termed 'power conversion''; that is, it must convert voltages applied across its input terminals into power delivered to its load. This is the so-called power amplifier. It should be noted that these two functions may be accomplished by the same amplifier, and most practical amplifiers are of

Figure 12 is an example of a power amplifier, while Figure 11 illus-

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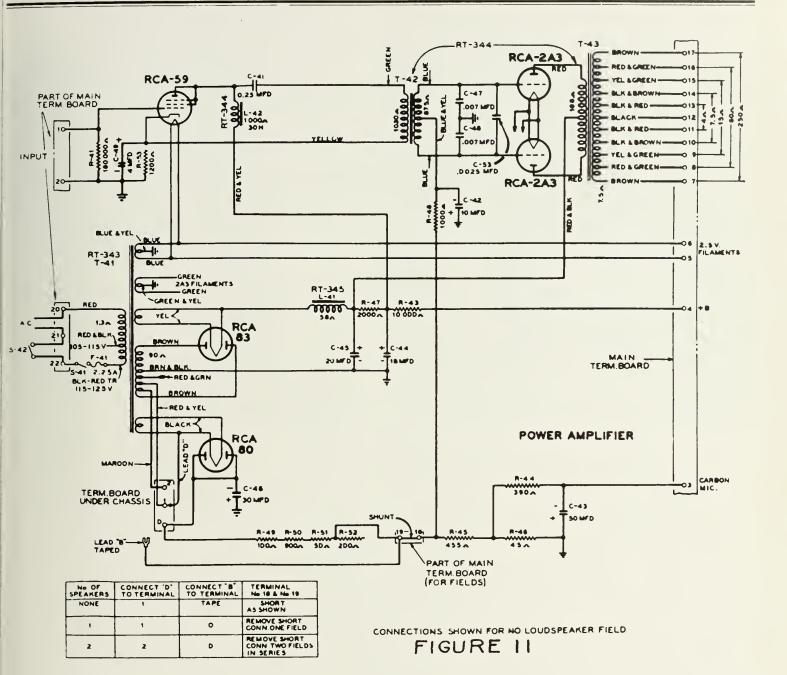
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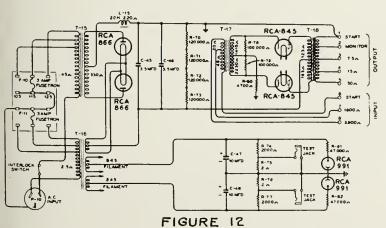
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trates a combination of voltage and power amplifier. In the latter figure the RCA 59 type tube acts as a voltage amplifier or driver stage, while the two RCA 2A3's act as a power amplifier.

In our next article we will discuss, more in detail, the various types of voltage and power amplifiers, the amplification or gain of voltage amplifiers,, the power handling capacity of power amplifiers, and the various types of vacuum tubes used in amplifiers.

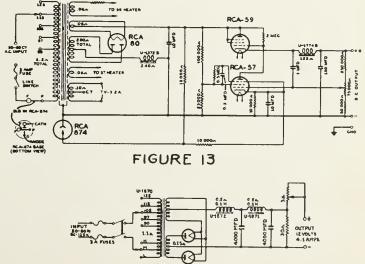


FIGURE 14

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have not, until now, been possible.

For example, with an f.1.9 lens, you can make good closc-ups indoors with two regular 50-watt light bulbs 2½ fect from the subject—one bulb, if in a reflector. Three 50-watt bulbs in reflectors supply sufficient illumination at

an f.1.9 lens and Super-XX, you can make movies that

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The subjects shown above are typical of the scenes now easy to film—with the extreme speed of Ciné-Kodak Super-XX.

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INTERNATIONAL ANTA MONICA CALIF

Vol. 10

February, 1939

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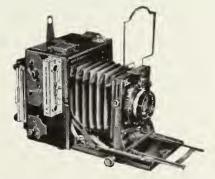
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Mitable PHOTOGRAPHER

Only International Professional Journal of Motion Picture Arts & Crafts

safety association program gets results

Motion Picture Studio Safety Association enters second year with excellent record of achievement under chairmanship of Paul M. MacWilliams, WB medical chief; crafts giving enthusiastic support; third rail adopted.

An important cooperative project of the motion picture industry that is producing valuable results after a year of pioneer activity by a small but enthusiastic group is the safety campaign of the Motion Picture Studio Safety Association. Notable progress in elimination of accidents and in expert care of accident victims has been made by the production end of the industry during the past five years. This is just another sign of the industry's growing up from its happy-go-lucky pioneer days to big business status.

Realization by studio executive management that safety conditions for workers has economic as well as morale values has been matched by enthusiastic cooperation from the various industry crafts. The program is being carried on along practical and efficient lines through individual studio safety committees, as well as through the joint organization in which each studio is represented. The Association was organized last April and in less than a year has proved a useful and efficient coordinator of the industry-wide safety drive.

While it was inevitable that the growing industry would eventually adopt sane and practical safety standards and an organization to educate and enforce them, the actual start of the existing program began when an ex-gob, doing stunt-work at the old Sennett lot in pre-war days was the victim of a serious accident.

The ex-gob had the experience of nine years of medical work in the U. S. Navy behind him and then and there he started selling himself (and eventually the industry) on the idea of organized industry medical service and accident prevention. Returning from World War service a few



Paul M. MacWilliams, WB director of medical service and accident prevention, who chairmans M.P. Studio Safety Association.

years later, he has since been continuously active in studio medical care. His name is Paul M. MacWilliams, director of medical service and accident prevention at the Warners studio, and chairman of the MPSSA. Last month he was unanimously re-elected chairman, while John Hamilton, of the RKO-Radio insurance department was elected secretary to succeed Louis Purcell, of the 20th-Fox accounting department, who had served in that capacity since the Association's organization last year.

MacWilliams is known to thousands of studio workers, having served on virtually

every lot in the business before joining the Warners organization in his present post. His enthusiasm has won the approval and support of these thousands, from top executives to the rank-and-file of studio workers. Under his leadership, the MPPSA is conducted on strictly non-political and business-like lines. Its present program revolves around a complete study of studio conditions, craft by craft. Monthly meetings of the studio representatives of the Association are held, at which all department heads of one or two selected crafts attend and seriously go over all safety angles connected with their particular departments.

Findings and suggestions from these meetings are conveyed back to each individual studio safety organization. Safety education filters down to the rank-and-file of studio workers from these lot meetings, while at the same time proposals and suggestions are developed for possible industry-wide adoption.

Outside of the general selling of safety messages and accident prevention psychology, which are reflected in improved accident control statistics, the most important accomplishment of the Association has been the agreement throughout the industry to adopt a standard "third rail" for all lighting parallels. This third rail, important to insure against falling of men and materials from the lighting arrays strung above studio sets, is the practical result of much discussion and special cooperation by experts in the grip and electrical departments.

Many minor policies and principles toward safer working conditions have been adopted, and eventually the program will establish similar standards to protect every



Harlan West, head of RKO grip department, shown with model for the new third rail, introduced by the Motion Picture Studio Safety Association, for use on all parallels. West and his department cooperated closely with the safety plan.

worker from the players and technicians on the set to the laboratory employees who work close to film and chemicals.

At the Warners lot. MacWilliams has instituted several workable incentives to exploit safety values. One is a \$10 cash award to the author of the best letter containing a safety suggestion that is accepted at the monthly studio meetings. Another is a huge and conspicuous record board, whereon each department's monthly safety record is displayed. This is on the wall of a building near the main entrance to the lot. Under a merit system, fairly apportioned by points according to craft size and hazards of work, each department competes against the others for an annual cash prize, which is distributed among the workers of the winning department. This has won the hearty support of the rankand-file to the extent that voluntary safety "policing" is the order of the day and workers who endanger department records by carelessness find themselves "on the spot" with their associates. Similar plans are in effect at other lots.

Representation on the Association governing body for 1939 includes:

Warners: MacWilliams, Harry Williams, Leslie D. La Vergne, Carrol Sax; Universal: Fred Duck, Don D. Laen; RKO-Radio: Hamilton, Edward J. Clark; Paramount; A. C. Zoulis: MGM: Jack Milburn, J. Koudry; Roach: A. Djerf, F. D. Allen;

20th-Fox: Louis Purcell, L. D. Witte;

Republic: Eric D. Hamilton, J. H. Glick; United Artists: C. C. Kalde:

Columbia: D. T. Lentz, George Stokes.

Representatives from the Selznick and General Service lots still are to be appointed. Also serving as regular members are Aubrey Blair, Screen Actors Guild, and Campbell MacCullough of Central Casting on matters affecting extra players; and Douglas Jones, safety engineer of the Lumberman's Mutual Casualty. This firm handles 80 per cent of the workmen's compensation insurance for the Hollywood studios and has been actively cooperating with the Association since its inception.

Additionally, business representatives and officials of the various A. F. of L. crafts unions are invited to attend the regular monthly sessions when meetings of department heads in their particular field are held. Among recent guests, who have engaged in round table discussion of safety matters have been Lew C. G. Blix. business agent of Local 37, IATSE, and Al Speed, business agent of Local 40, IBEW.

MacWilliams states to International Photographer that the Association welcomes and solicits cooperation and suggestions for better safety conditions from every branch of the industry. The Association chairman, himself, is constantly campaigning along these lines. Simple, intelligent suggestions and a sense of humor characterize his propaganda meth-

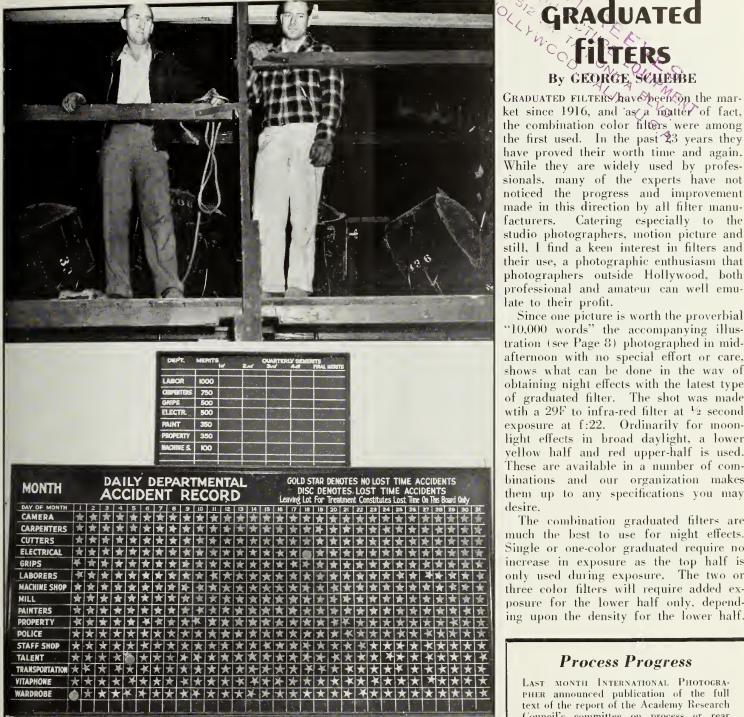
ods. Interesting and instructive is the following sample message, distributed along with a letter urging safety alertness to Warners' workers:

A FEW SIMPLE SAFETY RULES

- (1) Before operating any machine, see that the safety guards are in place and working properly.
- (2) Always wear goggles which are provided, while working with, or near emery wheels, for glass eyes are cheap and don't look so good.
- (3) When running short material through jointers, use your rule or piece of material instead of your hand.
- (4) Watch the upturned nail. Respect it as you would a rattlesnake.
 - (5) Do not wear tennis shoes.
- (6) Check every ladder and scaffold before putting your weight on it. If you think it unsafe, call it to the attention of your foreman.
- (7) When working overhead, do not drop loose material, and do not leave loose material on run-ways.
- (8) In coming down from up high, do not make short-cuts. Use ladders or steps provided for this purpose.
- (9) In lifting, don't try to be a Samson. You can have help merely for the asking.
- (10) Do not jump on and off moving trucks. It is bad medicine and besides, stunt men get paid for that,
- (11) Do not under any circumstances attempt to remove slivers with the aid of your pocket knife. This is a very dangerous practice, which oft-times results in serious infections, and infections cost you money.
- (12) When entering dark stages, proceed with caution until your eyes have had a chance to accommodate themselves to the change.
- (13) When driving on the lot, please observe the eight-mile speed limit, and watch all intersections.
- (14) If you are an electrician, always wear your gloves when making connections or plugging in. Watch out for shorts from your pliers when hooking up hot spiders.
- (15) Report all injuries to the First Aid station, so that they may be properly cared for. This is not held against you, but is for your benefit and protection.
- (16) Do not attempt to work, especially high up, if you are ill. It is dangerous not only to yourself, but to your fellow workmen. A word to the foreman and he will advise you.

On the Cover

This month's cover shot is unusual, because even before we sent it to the engraver we were asked whether it was a composite shot. It shows a Columbia camera crew shooting special inserts of crocuses blooming in the snow for the picture "Let Us Live." The scene is the setting for a symbolic concluding scene of the picture. The snow is artificial product of studio craftsmen and was concocted on the Providentia rental ranch near Los Angeles. In the picture, photographed by Art Marion, veteran stillman member of Local 659, IATSE, are: Lucien Ballard, cameraman; Lloyd Ahern, operator; Marcel Grant, Roy Babbitt, assistants.



TOP: New back guard rail for light parallel, introduced generally in studios through MPSSA; figure on right shows guard rail on back as used in past; figures on left shows the new style guard rail, which after many tests and scientific check-ups, proved nost efficient; BOTTOM: Daily department accident record bulletin in use at Warners, which is self-explanatory; small board at top depicts departmental merit system; see accompanying story for system of determining merits and annual awards plan for department with best safety record; most studios use this idea today as result of coordination plan to exchange safety ideas and test accident prevention methods through industry-wide cooperation under MPSSA plan.

Six Power Magnifier

A NEW AMERICAN manufactured item has been added to the Intercontinental Marketing Corporation line, a Six Power Magnifier, made of domestic optical glass. It has nickel plated frame and metal handle for convenient use. Manufactured by one of the leading American optical concerns, the magnifier is a very useful accessory for inspection of negatives, prints, etc. List price is \$1.50.

Linderman Visits Hollywood

ROBERT LINDERMAN, Managing Director of Mole-Richardson's British affiliate, Mole-Richardson (Eng.), Ltd., is currently in Hollywood visiting the parent M-R plant. Purpose of his visit is to keep abreast of latest production technique and survey new methods and developments at M-R plant. Before assuming his present post abroad, Linderman was Hollywood representative of General Electric.

GRADUATED By GEORGE SCHEIBE

GRADUATED FILTERS bave been on the market since 1916, and as a matter of fact, the combination color filters were among the first used. In the past 23 years they have proved their worth time and again. While they are widely used by professionals, many of the experts have not noticed the progress and improvement made in this direction by all filter manufacturers. Catering especially to the studio photographers, motion picture and

their use, a photographic enthusiasm that photographers outside Hollywood, both professional and amateur can well emulate to their profit.

Since one picture is worth the proverbial "10,000 words" the accompanying illustration (see Page 8) photographed in midafternoon with no special effort or care, shows what can be done in the way of obtaining night effects with the latest type of graduated filter. The shot was made wtih a 29F to infra-red filter at 1/2 second exposure at f:22. Ordinarily for moonlight effects in broad daylight, a lower yellow half and red upper-half is used. These are available in a number of combinations and our organization makes them up to any specifications you may desire.

The combination graduated filters are much the best to use for night effects. Single or one-color graduated require no increase in exposure as the top half is only used during exposure. The two or three color filters will require added exposure for the lower half only, depending upon the density for the lower half.

Process Progress

LAST MONTH INTERNATIONAL PHOTOGRA-PHER announced publication of the full text of the report of the Academy Research Council's committee on process or rear projection photography, containing the first minimum standards laid down by studio technicians in industry-wide accord in this field. Due to delays in securing final approval of the report text from the unusually large and representative committee, this will not be available for publication until March. Least honored and outstandingly important are the studio technicians working in this field. A hush-hush policy invoked in the belief that publicity for these amazingly resourceful experts might expose production secrets has blanketed them under a bushel. So that the entire industry may become better acquaintd with these men who are known and highly respected by those with whom they come in contact on their respective lots, INTERNA-TIONAL PHOTOGRAPHER will publish in conjunction with the Academy's first process report, a complete illustrative layout fea-turing the keymen of the process field.



Night effect shot photographed in mid-afternoon by George Scheibe with new type 29F to Infra-Red Filters; for details see accompanying story on graduated filters.

With these combinations you can make night effects that really are night effects: they look natural. black sky and dark foreground. They are made to order generally.

Also. natural density filters are made

up in graduated filters in any grade of neutral you want. They are made in singles or doubles—two color neutrals are extremely popular for making moonlight effects. Many effects can be obtained with these filters which would be impossible with any other filters or without filters, such as changing a young man to an old man, a white man to colored, and similar stunts.

It should be remembered that these graduated filters positively cannot be used in the round type, since the horizon varies with nearly every picture you take. Square filters are the only practical kind that can be used successfully as they can be raised and lowered to fit the sky-line in your composition. This is particularly important in motion picture work, as constant adjustment is necessary. You can have them in any length desired.

All other filters of the all-over color type can be used as round or square filters as there is nothing to adjust in the picture. The graduated filters can be made up in the single or one color filter with the lower-half clear: the K series, G, 21, 23a, 25a, 29f. The two color filters as follows: K-3 to 21, 16 to 23a, 23a to 25a, 25a to 29f, 29f to infra red. Any color can be made up in graduated filters. The three color filters are made up in the K series to G and into any red you might want. Try some graduated filters in your pictures and surprise yourself with the wonderful effects you really can get. They will help any photographer.





PICTORIAL BEAUTY marks these stills by Siegfried Levi, Local 659, IATSE, from recent Gene Austin western film.

STILLMEN MUSTN'T STAND STILL

Pertinent remarks by industry's recognized publicity expert on still pictures with suggestions for a program to improve quality of still pictures sent out from Hollywood for selling purposes.

By JOHN LeROY JOHNSTON

Director of Publicity, Walter Wanger Productions

One of Many things Hollywood has not learned during 25 exciting years is the very great difference between 'criticism' and 'ridicule.' No use explaining further, since those willing to learn will understand and why try to influence those who don't want to learn? It is an axiom, though not fully absorbed throughout Hollywood, that good pictures — still or motion—are not made by mechanical precision so much as by spirit, alertness and appreciation of values.

At the risk of being called a "smart alec" and "a know-it-all with unparalleled nerve." I should like to offer some frank criticisms in the form of observations on the Hollywoood still picture situation. My criticisms are not of personalities but of conditions; of what stillmen frequently overlook or have failed to notice. If stillmen had to peddle their own pictures to magazines, newspapers and theatres as must the press agent—they would realize a lot of things, and quickly. But I am not criticizing stillmen so much as still pictures. Let those really responsible for bad pictures juggle the onus.

Bring this thought down to cases, a stillman friend recently sent me a colored post card (see illustration Column 2) from a border-town. Only as a "gag" was the card an attraction, yet, as I looked it over and smiled at its senseless staginess and my friend's humorous comment, I tried to picture to myself how many stills Hollywood has sent out during the past year that were just as stiff, as unimaginative, as bloodless and emotionless. The man who sold the old-fashioned cards, felt gratified in disposing of a dozen in a year; but what about the Hollywood still of similar stamp.

That mediocre Hollywood still was created for one purpose, to intrigue thousands of show shoppers into paying 25 to 75 cents to see a motion picture which cost \$250,000 to a million dollars. The post-card was a "gag" but the Hollywood still was "bait" for a theatre showcase expected to draw a business of many dollars per day; to enthuse an editor, whose cooperation is needed to build business; to represent adequately, even a little too enthusiastically the appeal of an expensive (and perishable) motion picture show.

There could be no "gag" about the real commercial importance of the Hollywood still. It was to represent—in 10,000 places—the stars of the hour; the glamorous personalities of Hollywood and the genius of motin picture writing, direction and production. It was to be the advance man for a fortune in entertainment commodities. With this in mind visualize the typical mediocre Hollywood still.

You're bored?

So am 1! Such a still obviously couldn't perform its proper function. The still wasn't half as smart as the prospective theatre patron (particularly if he's a photography bug) who hungrily looked into the lobby, or into his newspaper pages eager to be sold an entertainment idea. It really isn't funny when you stop to analyze it seriously; it seems rather pathetic and stupid that an industry spending \$100,000,000 on



This horrible example illustrates stagey, posed type of meaningless picture decried by John LeRoy Johnston in discussing Hollywood stills.

making moving pictures to entertain the world, should pay so little attention to the basic element of its business attractors—still pictures.

Why were there so many uninspired, stiff, un-

Let's Argue!

John LeRoy Johnston, Walter Wangers's publicity director, needs no introduction to International Photographer readers who remember his provocative article on the same subject in the September, 1937, issue; and less to the many professional stillmen who have known him for many years as a recognized authority on exploitation pictures both from the standpoint of the editor and the technician. We have been urging him for some months to let go again with both barrels and he's done it thoroughly. Most important, we hope, this critical blast stirs up enthusiastic discussion and argument on any angles for the improvement of still photographs. Nothing would be more readable and constructive in this field than a good "open forum" debate during the next few months with "John LeRoy" as m.c. and referee.—Ed. attractive stills last year? A thousand and one reasons and ten thousand answers. Under the reducing glass the plain truth is—obviously, lack of consideration. Lack of consideration is chargeable not only to the man who clicked the camera but to the man (or men) who expected the stillman to accomplish in a few moments what the movie cameraman planned carefully, aided by a director, a script, an art director, electricians and the production department. Those most responsible are the men who give the stillman "the fast brush" and treat him like a nuisance—and the stillman who thinks so little of his own importance that he allows himself to be pushed away from good work that will be advantageous not only to himself but every person connected with making movies.

A stillman makes himself important not by pouting, being surly or unduly aggressive, but by selling the value of his work to all who have failed to realize it. The best form of salesmanship is alertness, personality and accurate knowledge of what better stills mean. The stillman cannot get these things from books. He can get them from observing successful men at work; profiting from this learning and from experience rather than either envying (or being jealous) or critical of the honest go-getter.

The art of making modern stills is very important; the art of handling people who help make stills better is equally important.

Good stills result from inspiration and an honest enthusiasm for making distinctive interesting pictures. Good stillmen are those who inspire confidence in their ability by being masters of themselves—leaders, not flunkies.

Shocking as it may seem the best still photography in this country today is by amateurs. Bound by studio limitations and pressure they might not do so well as professional stillmen, but the principal reason why so many amateurs are winning competitive photographic exhibits is that they are never satisfied; they constantly strive for something new, something original and unique; they eat, sleep and drink pictures; they have a picture-mania but they develop a keen—and most important commercial asset—individuality. They are not afraid to work to accomplish a feeling in still photography.

The amateur camera bug is often a pest but—what the hell? If the many suggestions every to make stills and the many suggestions every screen personality and every studio scene suggests doesn't create in the stillman somewhat of a passion to get there and make pictures it is more than likely that his temperament is not suited to still work. This is an age of passion, not complacency. The complacent, self-satisfied fellow is driving an elevator, acting as museum watchman or waiting for government checks.

A few years ago the movies were a novelty. They had for stars the Arrow collar man with the perfectly chiselled features and the girl "who looked like a china doll." The movies were mechanical. So were the actors. Ten years changed that. Things warmed up. Audiences sought pictures that revealed truth; deep, honest emotions. The talking picture arrived and while it had five years of novelty (or curiosity) by giving actors a voice, it came closer

to providing a warm, understandable human, living picture, than the movies had ever known before.

Then came the careless era. Producers felt the novelty would never wear off and a critical, more intelligent world audience began prying behind the scenes and into private lives of those who were so dominant, so forceful on the screen.

Unfortunately for Hollywood, everyone in our industry gossiped too much; thought too little of their obligations to a career and too much of their own vanity. A new brutally frank era developed—an era in which an audience of 25,000,000 people the world around, thoroughly "movie wise," demanded more than formula pictures—stills as well as motion pictures.

The sponsors of *Life*, *Look*, *Pic*, *Click* and newspaper editors realized this. They changed their perspective, lifted their sights and magazines which started out hoping for 250.000 circulation suddenly found a demand for 2,500,000 copies. That was no accident. The public mind had changed. Sponsors of motion pictures never thought to analyze the situation; few realized

Samples of what a stillman can do by using initiative, as discussed by publicist John LeRoy Johnston in accompanying article. This series of "whispering" scenes has human interest and natural humor that will appeal to editors. They were photographed by Jack Koffman, stillman member of Local 659, IATSE, under the exigencies of speed and other problems of rapid-fire independent production schedules. All scenes are from Larry Darmour productions starring Jack Holt for Columbia release.











that these popular pictorial magazines were catering to exactly the same clientele motion pictures cater to.

Magazine and newspaper editors created new techniques, new methods of picture presentation; they eliminated static, posey art; they demanded pictures that moved and lived and had feeling. Natural beauty replaced statuesque beauty perfection. Health, vigor and action supplanted precise, mechanical artificiality in still art. Check over 50 newspapers of today and you will soon discover that they do not all look alike any more. You'll also find that distinctive, action art gets the big space and the stilted posed "customary clinch shots" are either













reduced in space or appear in the wastebasket instead of in the drama section.

Today still pictures must "talk" through action as motion pictures talk through a sound

track; stills must approach the drama and spirit of the screen scene as much as possible. Twenty good action stills today will do more to draw patrons into a theater than 150 static stills that

merely fill up the old quota column on the still-man's report sheet.

Ten years ago magazines and newspapers de-pended entirely upon studio material and gave

Here are some pointed criticisms of present day studio stills.

Too MANY stills are spoiled by too much light; too much distracting detail in the background. Simple lighting with one "effect" light on the face or on the background is the greatest help to an effective, natural looking picture.

Retouchers shouldn't try to make every portrait look perfect. Players who pose for portraits should treasure their individuality beyond perfection. Stillmen make pictures; retouchers re-make them.

Don't make subjects look bloodless and artificial; give them character. Make them relax. Don't make them hold a pose so long they get "hep" to your own uncertainty. Spontaneity is important to good stills.

Make more portraits outside even if you have to use a Graphic or a Graflex or a Leica instead of the customary 8x10. Give your subjects something to think about, to respond to in giving portraits feeling and action.

Show strength in men subjects and gentility in women. Don't let subjects fall into set poses or over-act in stills any more than a good director will let them over-act in pictures. Don't click your shutter if the subject isn't thinking about his part of the job of making interesting stills.

Don't let the subject EVER know you are worried about the mechanics of making pictures. Keep your mechanical problems to yourself; keep the interest and spirit of your subject up.

Make more out-of-doors action fashion shots; less pretty posey pictures. Unknown models POSE in clothes; movie people belong, live and move in fashionable things.

Forget the old routine gags for off-stage art. You're wasting time. Make off-stage shots attractive through novel composition; novel angles. Make cute kids do cute things (not theatrical poses) and remember that it is NOT the usual things people do that make interesting pictures but the UNusual things actors and actresses do in their work and in their play that makes them different—and interesting. Don't make obvious off-stage pictures.

Millions of people see motion pictures and mentally record every performance of stars and players. Their euriosity demands a knowledge of what these actors and actresses are like when they are themselves. This is an age of character and frankness and human understanding (even though paradoxically it is one of rank intolerance) and the stillman's obligation to his principals should be to make his pictures sell the idea that movie folk are intelligent, alert, human, natural people who do UNUSUAL WORK. The still picture that ridicules a news-name or news-face ridicules the business that buys the photographer's bread and butter.

motion pictures limited space. Today they shoot their own stills and ignore the studio credits because they often make more interesting pictures outside of the studios than many of the studios do inside with control, player ohligations and studio lighting.

Syndicates, magazines and newspapers are covering Hollywood today—not just studios. The studio's job is to employ stills to sell motion pictures; the magazine, newspaper and syndicate photographers are charged only with making interesting, natural pictures of people who are news. What is ahead rests with how quickly publicity men and stillmen realize they must think like editors. Editors will give good art the biggest break it ever had but they insist (after a lot of study in many localities) they know what their readers (and movie fans) want.

It takes a pretty smart picture to sell theatre tickets today. The editor doesn' care for publicity—as such—but, he will trade a good break for art that helps him sell his paper.

Forget yesterday's compliments and yesterday's routine. Tomorrow is the challenge our studio stillman must answer. Directors, faced with their own problems and multiplying picture costs, don't sing out for a stillman any more; it's the stillman's job to anticipate stills and be ready and mentally prepared to get them when a break comes.

I have known stillmen who weren't interested enough in their assignments to read a script or want to read a script. This is no business for such men. The stillman is a pictorial reporter. His assignment is to cover (pictorially) a picture. His coverage must be accomplished while the picture is in work; he can't photograph

it when it isn't there. lle can't wait for his bosses to come to him. His way to advancement is in going to the bosses to find out. The stillman's tools today are not one camera but several cameras; not only one lighting arrangement but ANY lighting arrangement. Film has been made faster to help him. People generally are more picture conscious than ever before but the secret of better still is in making studio still photography continuously interesting work. When a stillman fails to find a romance and an incentive in making stills, he's passe, washedup, through. This is a fast game and it requires fast thinking and fast action. Movies don't stand still any more; neither does the audience. Still pictures must fit in too; they can't stand

Amateurs organize clubs, exchange ideas, tinker with dozens of experiments, have exhibitions and strut their stuff. Hollywood stillmen do far too little for their own good. Radio throughout the country has seized on photography for exploitation, as witness our successful Coast camera club program of the Columbia Broadcasting System. Movie lot amateur and professional photographers and the ace men of the syndicates are invited to tell of their experiences. The radio folk have exhibitions in radio studios and make a lot of fuss about ther progress. I haven't seen movie studios doing that.

Dozens of magazines have contests, open forums, means for exchanging ideas, formulas, suggestions, but here in Hollywood—the photographic art center of the world—we do little to encourage still art, to train and help stillmen.

In this connection let me point out two examples. First, from the amateur end, to my knowl-

edge, a small group of sincere enthusiasts have been laboring for several years to develop intelligent, practical and profitable intra—and and inter—studio camera club activity. They have made some little progress, but hy no means what they should if the idea were supported with the enthusiasm it merits.

Secondly, in my contacts with Ed Gibbons, editor of International Photographers' Local 659, and managing editor of the magazine, I know they have bent earnest effort and even pleaded with stillmen and publicity men to get behind just such a program through the medium of International Photographer. That's logical since every studio stillman is a member of Local 659, which publishes the magazine, and all receive it regularly. Various stunts were tried, from selection of the outstanding "still of the month" to technique symposium discussions. I, myself, let loose a blast about still conditions that certainly was outspoken enough to provoke some interest and discussion.

But considerable apathy regarding cooperative steps to improve conditions seems to exist. Gibbons and Aller continue with a small nucleus of able contributors to International Photographer. To my mind they should be swamped with suggestions and ideas each month from stillmen members.

Today one good still is a more effective ticket seller than 25,000 words; stills as symbols and sales punch are most important hut little is actually done to give this work the impetus it needs. And the blame for this lethargy rests on many other shoulders besides the stillman's. If it is a tough situation today—and it is—what about tomorrow. There will be movies tomorrow, next year and the next and you can bet your bottom dollar they will need different and better stills to help sell them. THAT'S SOMETHING FOR EVERY STILLMAN AND EVERY PERSON IN. THIS INDUSTRY CONNECTED WITH PUBLICITY, SALES AND EXPLOITATION TO THINK ABOUT.

Let's hope the time is not far distant when there will be a motion picture still art salon. Let's hope the time will come when the Academy will give an award for "the best still portrait" and "the best action still of the year." Let's hope the Film City will really lead the world in still art as well as in moving picture art and let us all join in a campaign to SELL everybody connected with motion pictures, publicity and exploitation the proper importance—and the need of greater cooperation on the set, and off—in making the stills representative of Hollywood represent the BEST of Hollywood. Let us not think of stills in point of quantity alone but rather in point of importance.

It is YOUR business, you professional readers of International Photographer. What do YOU say about it? And more important, what are you going to DO about it? I'm not a stillman. I'm just an observer—and a "hoper."

Mohr Article Due

Hal Mohr, president of Local 659, IATSE, recently returned from photographie assignments in New York. Watch for an early article in *International Photographer* by this outstanding photographic expert, past winner of the Academy award for cinematography, on production conditions and photographie trends in the eastern motion picture center.

NEWS OF THE MONTH

Studio stillmen plan first annual photographic exhibit and ball for this month; SMPE lining up spring convention for April in Hollywood; prize-winners in Kalart and Paramount studio club amateur contests; Zeiss awards.

TUDIO STILLMEN have joined together to tage a photographic exhibit and ball this nonth, which they hope to make a sucsesful annual affair. It will be held in he Blossom Room of the Hollywood toosevelt Hotel, February 24. All the tillmen participating are associated with najor studios and top independent production units and all are members of Local 59, IATSE. The annual affair is receiving full cooperation of other cameramen and studio technicians through their official medium, INTERNATIONAL PHOTOGRAPHER. Outstanding prints from the exhibit vill be published in the March issue.

Buddy Longworth, of Warners, is chairman of the committee in charge, which includes an array of ace still photographers from all the major studios, most of whose work is familiar to readers of INTERNATIONAL PHOTOGRAPHER over the past ten years. Committee members include: George Hurrell, Warners; Clarence Bull, MGM; Ernie Bachrach, RKO; Eugene Robert Richee, Paramount; Ray Jones, Universal; Gene Kornmann, 20th Century-Fox; Whitey Shaffer, Columbia; Stax, Hal Roach; Fred Parrish, Selznick International; Charlie Bulloch, United Artists; Madison Stoner Lacy, Warners; Roman Freucich, Universal; Mac Julian, Warners;

RCA Exhibit Planned

Details will be published in the March International Photographer on plans for a special demonstration of the newest type RCA projection sound equipment, which will arrive in Los Angeles late this month. Through the cooperation of RCA and International Photographer, projectionists in the Southern California area and other interested professional workers will be brought to Los Angeles as guests of the two organizations for inspection of the new equipment and a get-acquainted session with the RCA Hollywood engineers and service experts. Projectionists and sound technicians have evinced considerable interest in our current Projection Symposium, to which RCA engineers have contributed valuable and instructive articles, presenting much material hitherto not available in such handy and instructive form. Watch for details of the RCA equipment exhibit in the March International Photographer.

New Department Announced

Starting with the March issue, International Photographer will inaugurate a new department devoted to personalities, exchange of ideas and informal gossip of the studio photographic and technical fields. This new department and the improved and distinctive format in which this issue appears, are the first steps in a program of expansion and improvement of International Photographer's service as the only international professional journal of the motion picture technical field, under the supervision of the recently appointed magazine committee of Local 659. Chairman is Leon Shamroy, vice-president of the local. Cliff Manpin and Bob Coburn, ace still photographers, are the other members.

For this new department, International Photographer welcomes news of technical personalities, unusual assignments, promotions, new affiliations, valuable new developments and inventions by studio technicians, contributions to greater efficiency in motion picture and still photography technique; ips and suggestions, open forum discussions of technical topics. Members of Local 659, IATSE, and sister studio locals are particularly urged to contribute news and suggestions for this department. Cooperation in exchange of technical tips has been promised by the Los Angeles Press Photographers' Association, which includes the leading news and syndicate photographers, many of them members of Local 659.

Material already in hand from members of both organizations, including George Watson, Acma-NEA burean chief; Charles Rhodes, Jack Albin and Hymie Fink, ace fan magazine and syndicate photographers, and enthusiastic members of Local 659, in both motion picture and still photography, indicate that this new department will be a newsy and worthwhile addition. HOWEVER, DON'T FORGET THAT SUCH A SECTION DEPENDS UPON GENERAL INTEREST. IF YOU HAVE A STORY SLANT, VALUABLE TECHNICAL SUGGESTION, AN UNUSUAL PICTURE OR LAYOUT IDEA, MAKE IT A POINT TO GET IN TOUCH WITH Herbert Aller OR Ed Gibbons SO THAT IT CAN BE FOLLOWED UP FOR EARLY PUBLICATION!

Irving Lippman, Columbia; Scotty Wilbourne, Warners; Bert Six, Warners; Schuyler Crail, Warners; Muky Munkasci. Warners; Elmer Fryer, Warners.

Final arrangements for the affair were being completed just as International Photographer went to press, hence complete details are not available. Between 400 and 500 outstanding prints, exclusively by professional studio stillmen will be exhibited, and an outstanding dance band is being arranged for. Interested readers may obtain further details by telephoning exhibit headquarters at GRanite 9853. Tickets are priced at \$1.10, including tax.

SMPE Eastern Section Officers

Following a meeting last month of the Atlantic Coast Section of the Society of Botion Picture Engineers at the Hotel Pennsylvania, New York, the following officers for 1939 were announced: D. E. Hyndman, Eastman Kodak Company,

D. E. Hyndman, Eastman Kodak Company, chairman; George Friedl, Jr., International Projector Corp., past chairman; P. J. Larson, Consulting Engineers, secretary-treasurer; H. Griffin, International Projector Corp., governor for two years; R. O. Strock, Eastern Service Studios, governor for one year.

11th Academy Awards

NOMINATIONS for the various classes of achievement for the 11th annual Academy of Motion Picture Arts and Sciences awards were nearing completion as INTERNATIONAD PHOTOGRAPHER went to press, with final voting to take place this month and the awards presentations to be made at the annual banquet February 23 at the Los Angeles Biltmore Hotel.

The nominations were being concluded just as International Photographer went to press, hence were not available for publication in this issue, but it was learned that as predicted last month, "The Young in Heart," Selznick International production, photographed by Leon Shamroy, vice-president of Local 659, IATSE, was among the nominees for the outstanding cinematography honor. "Young in Heart" will compete against other outstanding photographic achievements for the coveted statuette.

Zeiss Awards Winners

WINNERS OF AWARDS in the competition section of the Fifth Annual Zeiss Ikon Photographic Exhibition, which will open in New York in February 1971 ruary, are: Pictorial Photography Group: first "Just a prize, C. D. Ryan, for his picture Shower"; second prize, B. Russell Whitaker, Jr., for his picture "Sandra"; third prize, Fred Trussler, for his picture of a steamer against the sunset. Honorable mention award winners: L. A. Wheeler, for his picture showing in silhouette a group of girls walking; Julius Shulman, for his "Sand Dune Detail"; and Donald Blker, for his "The Champ"; judges who awarded prizes in the Pictorial Group were Dever Timmons. Don Wallace, A.R.P.S., and J. Ghislain Lootens:

Press and Commercial Illustration Group:

his "The Market Goes Up"; second prize, William Vandivert, Staff Photographer for *Life* Magazine, for his picture of auto fenders; third prize, W. Eugene Smith, for his "Soldiers in Gas Attack." Honorable mention: Peter Stackpole, Staff Photographer for *Life Magazine*, for his picture of Eleanor Powell; Hans Groenhoff, for his seaplane picture titled "Sportsman Pilot"; and Roy Pinney, for his "Big Apple"; judges of the prints in this classification were: Kip Ross, Bob Leavitt, and Fenwick G. Small, editor Zeiss Magazine;

Scientific and Industrial Photography: first prize, Grace Fisher Ramsey, Ph.D., of the American Museum of Natural History, for her "Mayan Ruins"; second prize, W. Eugene Smith, for his "Jewelry Wedding"; third prize, Dr. Ernst Schwarz, for his picture of a fish. Honorable mention: G. Copeland, Neurological Institute, Columbia University, for his microphotograph, "Astrocytoma of the Frontal Lobe of the Brain"; C. C. Munro, for his chart of vibrations titled "Recurrent Noise"; and William Vandivert, Staff Photographer for Life Magazine, for his "Conveyor to Assembly Line"; judges being Herbert C. McKay, Maximilian Toch, and Dr. R. W. St. Clair.

In addition to award-winning prints, judges have selected 82 additional prints to make up a traveling exhibition of 100 photographs. As this exhibition goes around the country, a popular ballot will be conducted for the selection in the opinion of those viewing it, of the best of the prints receiving awards from the judges. This print will be awarded an additional grand prize of \$100.

In each classification was awarded a first prize of \$100, a second prize of \$50, and a third prize of \$25, and three honorable mention awards of



AMATEUR...

Winners in Kalart's second annual Syuchro-Sunlight contest: Upper Left: \$100 first prize winner, made by G. A. Curtis of Minneapolis, with Kalart Micromatic Speed Flash and Eastman Recomar 33 camera exposure, 1/50th second at f:8, using one No. 20 GE flashbulb, no filter; sun at left of camera; Upper Right: \$50 second prize winner, made by Lt. Francis Griswold, Langley Field, Virginia, with Kalart flash and Eastman Recomar 33 camera; 1/200th second at f:10, using one No. 1 Wabash Superflash bulb, no filter; Below: \$25 third prize winner, made with Kalart Flash and 31/4x 41/4 Speed Graphic; exposure 1/200th second at f:22, using one Press 40,000 Wabash Superflash bulb, K-2 filter.

... WINNERS



From Paramount Studio Club's third annual grand salon, ably handled by Douglas Rudd, president, and his associates in this progressive studio elub, come these prints. There were two classes of winners, one judged at last month's annual affair by Larry Lewin, secretary of Los Angeles Pictorialists; also the prints that took honors for capturing the most points during the year. Top: Douglas Rudd's "Tumblers," Class A point winner; Center, Left: William Grote's "Mountain Summit," Class A salon winner; Center, Right: "The Cat," which won Salon Class C second place for Ted Beets; Lower, Left: "Water Scene," with which Mitch Crawley won the points Class C honor; Lower, Right: Ed Blessington's "Doves," which took Class B salon trophy.









SMPE Meets in April

AFTER AN ABSENCE of two years, the Society of Motion Picture Engineers will hold another of its semi-annual conventions in Hollywood, this year April 17-21, with Hollywood Roosevelt Hotel as headquarters. Many studio technicians are participating in plans for the session, under the direction of Major Nathan Levinson, WB sound chef, who in addition to heading the

Academy technicians' branch, is executive vicepresident of the SMPE; Loren Ryder, Paramount sound department head, who is Pacific Coast section chairman, and Homer G. Tasker, Universal sound chief, a member of the board of governors.

As usual the various convention sessions will be open to all Hollywood studio officials and technicians. To accommodate large crowds expected for a number of the meetings on the program, the Filmarte Theatre will be used. In order to accommodate studio workers who are tied up during the daytime, two special night sessions will be held at which papers on photography, sound, laboratory practice and other subjects of special interest to the studio workers will be given.

An outline of the program of papers to be presented will be published in the March issue of International Photographer.



CLOSE-UPS

NORMAN ALLEY: best known cameraman in the world.

F ALL THE photographers who have manipulated motion picture pparatus, from the days of hand-cranking to 1939's modern nd super-efficient equipment, probably the best known to the eneral public on an international basis is Norman Alley, a ocal 659, IATSE veteran, who has chased news pictures the orld over, whose pictures of the Panay bombing were front age news the world over last year. Alley typifies in the pubic mind the romance of the newsreel game, identified in their onsciousness as a screwball, exciting day-after-day adventure. Newsreelers, like newspapermen, have been the victims of the vild imaginations of scenario writers and lurid pothoiler hacks. Probably the greatest refutation of the inaccurate portrayal of ewsreel men from the first silent thriller to the most recent epic," MGM's "Too Hot to Handle," is walking around Hollyvood every day in the person of Norman Alley.

This latest concoction of the scenario whippers-up is suposed to have had a literary springboard in the sensational experiences of Alley and Eric Mayell, another Local 659, IATSE, ret, in covering the Sino-Japanese fracas. If so, the dramatic neader must have gone up instead of down, for it is as faremoved from the realities of newsreel work as the latest motion picture titanic of "the front page" is from the ordered and

edious routine of the average newspaper city room.

Alley, who is in charge of Universal's Southern California ase, works from a neat business-like side-street office in the leart of Hollywood on Yucca Street near Vine. His personality s pleasant and agreeable. He reflects a keen interest in the poential news values of any development. There is no jack-inhe-box horse-play, but rather the common sense, well-informed nterest with which a mature person attacks any business assignment, be it selling insurance or cutting the production costs of

Starting in 1910 as a copy boy on the Chicago Tribune, Alley has been exercising and developing his news sense steadily; and although he has acquired considerable technical knowledge ince, he believes that the fundamentals of good newsreel work come from experience in handling news. For most work, the echnical end must be absorbed to some extent, but in any job where the practitioner must deal with the public and please the public, the basic qualities for success must be judgment and liplomacy.

Technical stuff supplies the tools; the other qualities are he means of getting something useful in the way of production rom the tools, is Alley's viewpoint. That's pretty simple, but ike a lot of other simple things, too easily accepted without peing absorbed and put into application. Result is that many all by the wayside. The outstanding newsreelers today are

hose who stick to basic principles.

It's no accident, Alley points out, that a majority of the newsreel aces have come up through the newspaper ranks. Newspaper training has given them the urge to produce results against obstacles. And even on routine assignments there are plenty. Newsreel photography is, first and last, an eye-witness account. It can only tell the story by witnessing the event. It can't be ewritten or covered in any other way except having a camera present-and loaded with film! That last phrase alone packs material for an interesting yarn. Further, news has a relative value in ratio to the speed with which it reaches the consumer,

Opposite Page: Norman Alley's the world's best known phoographer, shown with his De Vry newsreel camera, described in this month's CLOSE-UPS.

hence, a complicated and highly specialized system of delivery, rapid editing, distribution of prints, etc., has been developed by the newsreel organizations. The news cameraman is the keystone of the structure. Without his intelligently photographed record of the news event, the rest is just a lot of efficient machin-

ery with nothing to do.

Naturally, Alley believes a capable newsreelman must be master of his camera at all times, and the same in his sphere for the equally valuable soundman partner. (See Int. Photog. April, 1937.) While the newsreeler must know his camera thoroughly, there is much in the way of theory and artistic application, which, while useful, is not as essential as in studio production. The first essential is to get the picture in the time allotted, frequently very short. Whenever possible, newsreelmen seek (like their production contemporaries) to achieve unusual and striking effects of lighting, angles, capturing of personalities—but only when the story itself is assured.

In most cases—apparently in proportion to the importance and news value of the story—the time limit is short. Little but straight camera reporting is possible. Alley believes that the newsreeler's mental attitude should be divided 10 per cent to photographic mechanics and 90 per cent to news values.

Despite the international publicity Alley received over the Panay incident, he believes many other experiences he has gone through were more dangerous and gave him worse scares. He points out that it's all in the day's work and that many other newsreel members of the IATSE frequently risk their lives with less glory. Insurance companies rate the work as so hazardous, that their rates are so exorbitant as to be virtually prohibitive.

Big problem of the newsreeler today is not engaging in battles of wits with his competitors, or pulling out of hairraising scrapes. It's the dull and difficult task of injecting something new in approach—of avoiding the trite—in the regular assignments that come his way. Newsreelers spend a lot of

thought on that problem.

As Alley points out, 99 per cent of the assignments handed the newsreel photographer are of the type that have been done over and over again. Seasonal stunts, political, sports, personalities, freaks, contests, fires, disasters, floods, bathing beauties. fashion shows, are among the routine assignments that demand initiative on the part of the photographer to prevent audience boredom.

The photographer with initiative studies each situation in advance, seeking to find the particular news angle of the event that will strike a responsive chord with the public. He tries to center on this one smash value and to also build up as many contributory and supporting angles as possible. In fact, the newsreeler instead of covering "something new every day" must try to find some new angle every day for something old. And in this task he must be his own writer, director and technical expert.

Speaking of equipment, Alley says: "I personally prefer the DeVry cameras for all types of news work. I use their sound cameras for subjects where sound is needed for proper coverage, and the automatic hand type for shots where sound is not necessary or cannot be obtained. In all situations I have met, the DeVry equipment has never failed to deliver; and its ease of operation, in either type, is a decided asset.

After a leave of absence on a lecture tour, Alley is back at his Hollywood post. He's forgotten all about the Panay publicity. Last time I saw him he was phenagling the angles of a commercial aviation news yarn with as much enthusiasm as

though it were a World War battle.—Gib.

PROJECTION SYMPOSIUM, PART V.

Discussion of amplifier requirements for the reproduction of sound in theatres, covering three general classifications: the gain required; the power capacity required; and the types of tubes most frequently used.

By W. S. THOMPSON

RCA, Hollywood

IN OUR LAST article we discussed amplifiers and power supplies for same in a general way, pointing out the difference between a power amplifier and a voltage amplifier. In this discussion of Amplifier Requirements for the reproduction of sound in theatres we shall divide the article into three general classifications, viz: (A) The Gain Required; (B) The Power Capacity Required, and (C) The Types of Tubes Most Frequently Used.

(A) GAIN REQUIRED

There have been many definitions of the gain of an amplifier which involve the ratio of the input voltage to the output voltage, or the ratio of the input power to the output power, and some have even involved some complicaed ratio between the output power and impedance with the input voltage and impedance. All these definitions are undoubtedly correct and have their special applications, but for simplicity's sake we shall define the gain of an amplifier as its insertion gain (as described below) and will so use the term "gain" from now on. It will also be assumed that the reactive components of the impedance involved are small with respect to the resistive components. All powers will be expressed in db level.

(a) Insertion Gain of an Amplifier. If we have a generator G, as shown in Figure 1-a, having an impedance R_1 and delivering power to a load L, having an impedance R_2 , we will examine what happens when an amplifier is inserted between the generator and the load as in Figure 1-b. The effect of the amplifier will be investigated for two conditions, as follows:

(1) When the load impedance R_2 is equal to the generator impedance \hat{R}_1 :

If the power delivered to the load L under condition a in Figure 1 is P_1 (expressed in DB), and if the power delivered to the load under condition b is P_2 , the gain of the amplifier is: Gain in DB $= P_2 - P_1$.

(2) When the load impedance R₂ differs from the generator impedance R₁:

Under these conditions the power delivered to the load is not as great as if the impedance were matched, hence we can increase the power delivered to L by inserting a matching transformer T between the generator and the load, as in c of Figure 1. This transformer will, of course, have an impedance ratio of R₂ over R₁ and its insertion will increase the power delivered to the load to some value as P₁.

If we now insert an amplifier between the transformer and the load, as in d, Figure 1, the power will again be increased to a value such as P.:

Gain in $DB = P_2 - P_1$.

It should be noted that the amplifier should not be credited with the increase of power which was obtained by the use of the matching transformer.

(b) Gain Requirements for Theatres. In theatre reproducing equipment the various elements shown in the very much simplified schematic diagrams of Figure 1 are as follows:

Generator G is the photoelectric cell and its associated transformer,

Load L is the speaker system.

It is therefore obvious that the gain required for any particular theatre is equal to $P_2 - P_1$ where P_2 is the power which must be delivered to the speaker system and P_1 is the maximum power which could be delivered by the photoelectric cell and its transformer.

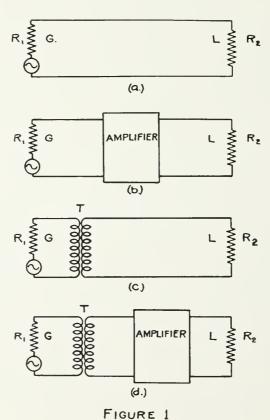
For standard soundheads the value of P_1 is, of course, fixed by such elements as were described in the article in the September issue and is approximatly minus 50 db for the RCA soundhead.

The value of P_2 is influenced greatly by the size and the acoustical conditions in the particular theatre. This is illustrated in Figure 2, which shows the relationship between the size of theatre in seating capacity and the recommended power P_2 for the speakers.

Having now determined P_1 and the value of P_2 for the largest theatre for which a given equipment is being designed, there remains only one more factor to be determined before the total gain may be calculated, viz: the factor of safety to be allowed; that is, how much more gain than is absolutely necessary should be designed into the equipment, say 15 db.

Assuming that the largest theatre in which the equipment is to be used has 3000 seats, Figure 2 shows that P₂ should be about plus 39 db. Calculating the necessary gain for this equipment, adding of course the 15 db factor of safety, we have

Total necessary gain = $P_2 - P_1 + 15 \text{ db}$ = 39 - (-50) + 15= 104 db.



As an example of such a sound projector, the RCA PG-118 reproducing equipment has a gain of 110.5 db and a power output of +39.5 db or 50 watts.

(B) POWER CAPACITY REQUIRED

When the first sound reproducers were installed in theatres some years ago it was considered adequate if the power amplifiers would deliver 10 to 15 watts for the larger houses. Since that time there has been a trend to higher and higher powers until the use of two 50 watt amplifiers has become quite common. This trend has been brought about by several different factors. One of these is the tendency for the studios to release high range prints; that is, sound tracks where the louder sounds, such as gun-shots, etc., are recorded at a considerably higher level than the average dialogue. such a print is displayed in the theatre the fader setting must be increased to bring the dialogue up to a comfortable listening level. With such a fader setting the loud sound effects will overload the amplifier system and become distorted unless a considerable power handling ability is provided. Another factor which has influenced the recommended power capacity has been the improvement in the low frequency response of the modern two-way speaker system. new speakers the amplifiers are called on to deliver more actual power at the low frequencies than ever before. The trend in the acoustic treatment of theatres seems to be toward making them more highly damped, which of course means that more power must be delivered to the speakers since there is less acoustic reinforcement.

All the above conditions, and much practical experience shows that the relationship between the recommended power handling capacity of the amplifier system and the size of the theatre to be as shown by Figure 2. The area which is shown shaded takes care of certain acoustic differences between theatres of approximately the same size.

The method by which the power handling capacity of an amplifier is to be specified has been under discussion for some time. The method which has been most used in the past is to state that the given amplifier will deliver say 50 watts at three per cent distortion. For purposes of commercial discussion this is still the method in general use today, but it does not tell the complete story that the maufacturer must worry about. The specification mentioned above is usually based on a 400 cycle measurement and is usually checked at the same frequency, but the manufacturer has the responsibility of so designing the amplifier that it will deliver the same power with no greater distortion at all frequencies that it will be called on to amplify.

(C) TYPES OF TUBES GENERALLY USED

The first tube in the amplifier shown by Figure 3 is an RCA 1603 and is an example of the 1600 series of tubes RCA makes for special purposes. The 1603 can be used as a pentode or as a triode and for either of these uses is

uch quieter than the equivalent 6C6, both from microphonic standpoint and as far as free-m from tube hiss is concerned. The 1600 om from tube hiss is concerned. The 1600 ries are not just specially selected tubes but re of different and more rugged design made provide very quiet tubes for use in low level rcuits and for other special purposes.

In the design of both recording and reproducing amplifiers the engineers have one problem which is little appreciated by the users of such amplifiers. In the manufacture of vacuum tubes there must of course be set up certain tolerances of variation for plate current, mutual conductance, Mu, etc., so that only tubes within

60

15

6

the acceptable range are sold. All tubes not meeting these test specifications are rejected.

Whn the amplifier design engineers are working on a new product they must know these tube tolerances so that such variations as are allowable will have no appreciable effect on the operation of the amplifier. It is quite evident from the above that the indiscriminate changing from tubes of one manufacturer to those of another has distinct disadvantages.

In the advance of tube manufacturing there have been placed on the market many improved tubes which may be used to get quieter operation or longer life or other advantages. For this reason any change in tubes from those specified by the amplifier manufacturer should only be made on the recommendation of a competent service organization.

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IN THEATRE

NUMBER OF SEATS

FIGURE 2

FIGURE 3

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TRADEWINDS

Gage system for preserving film and renovating old film; new Bell & Howell automatic pilot light; two Argus models; Bardwell & McAlister Baby Keg Lite tested with GE 750-watt lamp; travelling Leica show; other news.

An interesting approach to the problem of film deterioration and spoilage is being made by George J. Gage of Hollywood with a new type machine and method, which we have found useful at the Paramount exchange in Los Angeles, and which other studio technicians have found valuable for renovating old film. This latter service has proved particularly valuable recently in treating long-stored film to make it pliable, that otherwise could not have been projected. Studio process departments have been particularly interested in this phase of Gage's work.

However, Gage is primarily interested in marketing his device for regular use in film exchanges throughout the country to insure keeping up print quality in the subsequent run houses to the standards of the first runs.

His device, which with the methods of application and materials used is fully patented, consists of a special machine, through which the film is run for cleaning; and methods of applying special cleaning solutions and application of a special thin blue coating to overcome the tendency of all film stock to develop a yellow or straw tone whether in storage or regular use.

With Gage's system the film is subjected to a special cleaning solution, which is applied under pressure, and the solution is washed off by air pressure without any actual contact at the cleaning point. The film then passes to a central device which seals in moisture through heat and pressure. Application of the blue bath to counteract the yellow tinge is the last step and is optional, since this is required only a few times during the booking of a print, according to extensive tests.

Gage does not claim to be able to restore scratches and perfectly re-condition very old film, but he has accomplished some astounding results for some of the studios, laboratories and film libraries, as well as for the Los Angeles exchanges. Only model of his machine now available is installed in his headquarters in the Hollywood Storage Building on Highland Avenue in Hollywood.

While the treatment which applies the light rectifying agent lasts indefinitely, it in no way becomes part of the film, as there is no chemical reaction whatever. All of the applications and treatments described are accomplished without the aid of wiping agents or buffers, or the use

Color Series

During the past month the editors of International Photographer and our informal advisory committee on the examination of the situation with regard to motion pieture eolor from the praetical professional standpoint have been busy lining up facts and figures on scores of eolor systems, as promised in our January issue. While many discussions of various phases of still eolor photography have been presented in different publications, this is the first practical series of up-to-date articles on motion picture eolor systems, their methods and technique ever published. Following upon our analysis of the major color systems in the January issue, the next phase will include the color systems in and around Hollywood, that have been developed to the status of being able to deliver some release print proeessing services, as well as the latest progress in the single film triple emulsion systems of Eastman and Agfa.

of carbon tetrachloride or any chlorinated solvent.—BILL RING, Business Representative, Exchange Local B-61, Los Angeles.

Automatic Pilot Light

Bell & Howell announces that a new automatic pilot light will be standard equipment on all Model 138 Filmosound projectors effective with January production. The pilot light is so situated on top of the blower housing as to very clearly illuminate the projector film-moving mechanism and amplifier controls. The light is operative as soon as the projector current supply cord is connected with current source.

The pilot light is turned on automatically, simply by pulling the pilot light cap out of

The pilot light is turned on automatically, simply by pulling the pilot light cap out of its housing. Pressing cap back into housing turns off the light. The lamp is easily accessible for replacement by unscrewing pilot light cap. Through use of this new ever-ready pilot light the projector operator can perform film-threading operations and see to operate amplifier controls without resorting to other illumination.

New Argus Cameras

Two New Argus cameras, with self-calculating built-in exposure meter, which the manufacturer claims cannot be found in any other 35 mm camera in the popular price field, and a 20 per cent price reduction in the original Model A Argus, have been announced by the International Research Corporation, Ann Arbor, Mich. The two new cameras, designated as Models A2 and A2F, will make it possible to ascertain operture opening and shutter speed accurately and quickly. Readings are taken right off the simple scale on the camera case.

The Model A2 Argus is described as having a "certified" f:4.5 triple Anastigmat lens; 1/25

to 1/200 shutter speed, and uses 35 mm film in daylight loading 18 or 36 exposure rolls. A new shutter release, which it is claimed involves less danger of camera movement when an exposure is being made, and a larger and more easily-red front plate on the lens barrel, are additional features of the new models. The A2 is priced at \$12.50. The Model A2F Argus, priced at \$15, has a calibrated focusing mount on the lens barrel which facilitates focusing for distance. Specifications otherwise match those of the A2. The original Model A Argus, which has been the world's largest selling miniature camera for the past three years, is now reduced to a new low price of \$10.

Light-Lamp Team Tests

BARDWELL & McAlister announce that after exhaustive tests at their plant that the new 750watt globe just introduced by General Electric functions ideally with the lighting equipment firm's popular Baby Keg-Lite. Tests showed that the new globe gives the same life as the 500-watt pre-focus projection lamp, which has been in use at the studios for some time, B & McA engineers state. During the tests, they report, the lamp housing was not unduly hot; and there was no trace of blistering or other globe deformation. The new type 750-watt unit is in a T-24 bulb with medium bipost base. has the same light center and is interchangeable with the 500-watt T-20 medium bipost lamp. The Bardwell & McAlister Baby Keg-Lite is regularly supplied with either this new medium bipost socket or the older pre-focus socket. Another recently adopted optional feature on the Keg-Lite is a collapsible stand, which can be carried conveniently and manipulated in a small

Emby Sales Deal

Intercontinental Marketing Corporation, New York, and Emby Photo and Film Machine Corporation, New York, announce that they have arrived at an agreement simplifying sales of the various products sold by both companies. Beginning this month, Intercontinental will take over the entire selling end of Emby photo machinery and photo products within the United States. Intercontinental's sales staff will offer the line of Emby commercial equipment and accessories to the photo finishers all over the country. Emby Photo and Film Machine Corporation has delegated its president, M. Durlin, to cooperate in the sales promotion of the products of both cmpanies.

Travelling Leica Show

The Leica Universal Camera Exhibit, which shortly goes on the road, will consist of working set-ups of specialized Leica camera accessories, such as the photomicrographic, photomacrographic, copying, and reproduction devices, etc., in addition to the complete line of Leica cameras and more than 500 accessories.

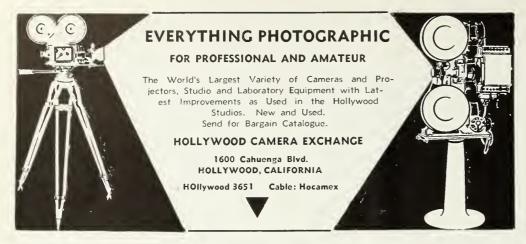
Not only will the set-ups be in working condition, but photography fans will be able to familiarize themselves with the accessories by actually working with them and making pic-

Anton F. Baumann, Leica expert, lecturer, and

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photographer, will be in personal charge of the exhibit and will make available to the amateur his aid and assistance. In addition to this, a special demonstration will be given by Mr. Baumann of his technique in making giant enlargements. Also, on the same evening of the demonstration, he will give a talk on color photography, illustrating it with his own remarkable color photographs.

In each city visited, the Leica Equipment Exhibit will be on display for three days from 1:00 to 10:00 P.M., and the demonstration of giant print making and color photography talk will be given by Mr. Baumann on an evening

during this exhibt.

Present itinerary of the exhibit includes Philadelphia, Pa.; New Haven, Conn.; Hartford, Conn.; Providence, R. I.; Boston, Mass.; Syracuse, N. Y.; Rochester, N. Y.; Buffalo, N. Y.; Reading, Pa.

Invitation cards and information as to the exact dates may be obtained directly from local Leica dealers or from E. Leitz, Inc., 730 Fifth Avenue, New York.

Paper Edge Protector

Protection with speed and simplicity for the edges of photographic prints, blueprints and valuable papers generally is offered by a compact new device manufactured by David White Co. of Milwaukee. The machine quickly and neatly applies an opaque acetate tape to the edges.

Perutz Copying Film

Intercontinental Marketing Corporation. New York, announces another specialized Perutz emulsion called "Perutz Graphic Film B," a miniature camera film specially designed for reproduction purposes and copy work. Graphic Film B has a very thin layer of emulsion, ultra fine grain, anti-halation, highest power of resolution and hard gradation. Its sensitivity is approximately 2—3 degrees Schiner and color rendering is claimed to be excellent. The new film is available in cans containing 17 feet of unnotched

New Catalogs Out

Two interesting new catalogs are just off the press from Art Reeves and Bardwell & McAlister. These may be obtained by writing the firms at their addresses appearing in the Classified DIRECTORY on Page 26. Highlights of new additions and improvements of the Reeves and Bardwell & McAlister lines will appear in next month's issue of International Photographer. Another firm to provide interesting news material for next month's Tradewinds is Bob Lynn, Los Angeles photographic supply dealer, who is announcing a number of new type enlargers of his own manufacture, along with some new type importations in virtually automatic enlarging equipment. Lynn now is preparing new catalogs and literature on this equipment and other additions to his line of accessories. New catalogs also are available from Willoughby's, 110 West 32nd St.. New York. This firm also has available new literature on a monotone viewing filter and a rapid automatic electric print dryer.

Cinematone Rental Lot

CINEMATONE CORPORATION, headed by Dr. Gordon Keith Woodward and W. P. Falkenburg, have taken a three year lease on Associated Cinema Studios. Company will make their own phonograph and radio transcriptions, and produce series of short subjects, besides renting space to independent production units.

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Another important Ciné-Kodak accessory is the Kodascope Movie Viewer, an ingenious little editing device that shows you your films in action. Added to your film editing equipment, it gives you instant check not only on photographic quality, but on the flow of action in your films. The enlarged film image is shown on a hooded ground glass,

1" x 13/8" in size. Incorporated in the Movie Viewer is a spring-punch for edge-notching the film, as a means of identifying future placement of titles, etc. The price of the Kodascope Movie Viewer is \$20, in either the 8 mm. or the 16 mm. model.

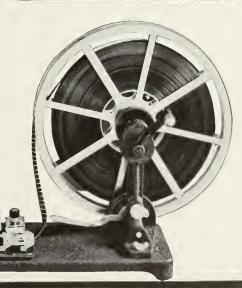
THE Kodak 16 mm. Enlarger in use. Right, above, the to-be-enlarged movie frame is clamped into place between a diffuser and the special 13 mm. lens in the Enlarger. Then the exposure is made, with the Enlarger held close to a No. 1 Photoflood. From the resulting negative, prints and enlargements can be made as desired.

The Kodascope Movie Viewer is shown, below, as used in conjunction with the Kodascope Master Rewind. With the Viewer are three other items of interest—the Kodascope Editing Bracket (\$1.35), the Universal Splicer (\$12.50), and the new 1600-ft. film recl (\$4.50). The Master Rewind itself is priced at \$30. At the left is the viewing hood of the Viewer in which the film image is seen brilliantly and in action.





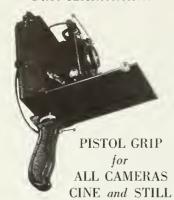




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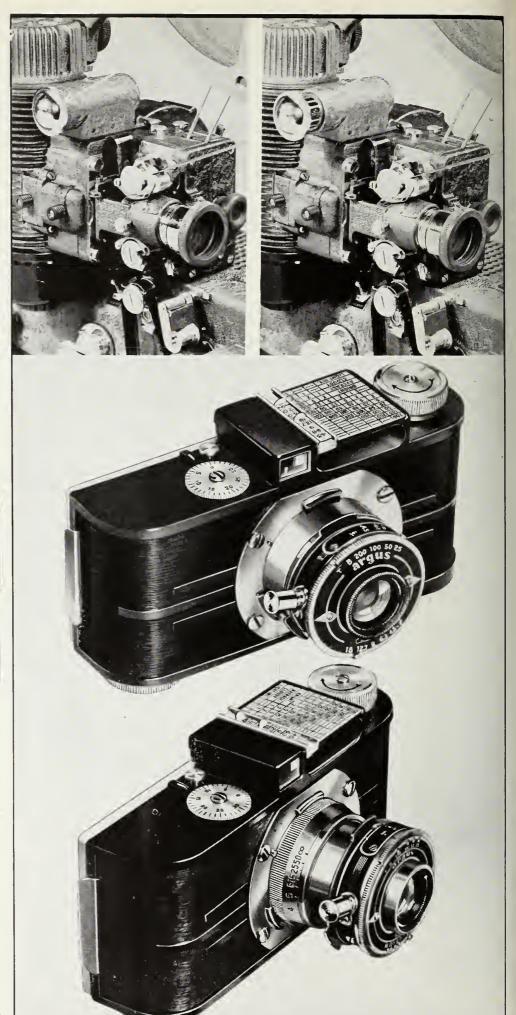
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anatomic-X in Roll, Packs

ODAK PANATOMIC-X Film is now available in a ide range of roll film and film pack sizes, anatomic-X has appreciably finer grain than that hich won high regard for the present Kodak anatomic Film. This improvement in grain is stained without sacrifice in speed, as compared Panatomic, and Panatomic-X roll films and acks are established as all-around, high-quality ne-grain panchromatic films of ample speed for early all conditions other than those requiring a extreme speed of Kodak Super-XX.

This fine-grain film is of special interest to wners of cameras making vest pocket or half-20 negatives, and other smaller roll film and lm pack cameras producing negatives from which nlargements are desired. It is recommended not nly for high-quality results with ordinary subjects, but also for copying photographs, halftone productions and documents, for technical phopgraphy, and for salon and exhibition work.

Acoustical Compound

ATEST ADDITION to many acoustical materials vailable for interior construction is Berry-Cel, synthetic composition of limestone and silicate f soda manufactured by F. E. Berry, Jr. & Co., f Everett, Mass. It is claimed to have high ualities of sound absorption and light reflection nd can be easily cleaned by a special applince of an unusual nature. This pumps soapy vater and a rinse through the inter-connecting ir-cells and recovers the water by a vacuum evice to prevent any dripping.

Diafant's New Model

DIAFANT MINI-PROJECTOR Vla, a new addition to he line of Diafant Projection Apparatus, has ust been announced by International Marketing Corporation, New York. The new model Vfa s constructed for the use of transparencies of 1/4x3/4 inch size and is claimed to be the only nini-projector of this kind on the American market at present. Intercontinental also announces hat the Diafant Model 1 is now available with greater variety of lenses. Besides the Omar :3.5—100 mm—standard equipment, the following lenses are obtainable: f:3.5, 120 mm focal ength; Omar f:3.5, 150 mm focal length.

DuPont's Zelan

FROM DuPont comes a new finish for cloth garnents and fabrics, known as Zelan, which is aid to be very effective in repelling moisture. Not only does it maintain freshness of garments, and resist dirt and moisture spots, but it also said to stand up for the normal life of any garment through repeated laundering or dry cleaning.

Weather-proof Bolts

New TYPE patented bolts, manufactured by Lamson & Session Co. of Cleveland, feature tapered grooved shanks between the threading and the head, which when drawn down flush without counter-boring, are said to provide moisture resistant, smooth surfaces for wooden equipment or construction that is exposed to the elements.

Opposite Page: In and out position views of new automatic pilot light for Bell & Howell Model 138 Filmosound. (Page 20); Center, the new Model A2 Argus, and Bottom, new Model A2F Argus; both of which have built-in selfcalculating exposure meter. (Page20). The



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Hollywood Camera Exchange 1600 N. Cahuenga, Hollywood. (HOllywood 3651)

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Duplex Cinema Equipment Co. 4572 Santa Monica Blvd., Hollywood. (MOrningside 14717)

Eastman Kodak Company Rochester, N. Y. Hollywood, 6706 Sta. Monica. (HEmpstead 3171)

Kalart Company 915 Broadway, New York. Hollywood, Taft Bldg.

Devry Corporation 111 Armitage Ave., Chicago.

Mitchell Camera Corp.
665 N. Robertson Blvd., West Holly'd.
(OXford 1051)

Sun Ray Photo Company 138 Centre Street, N.

Fried Camera Company 6154½ Santa Monica Blvd., Hollywood. (HE. 6716)

Camera Rentals

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Eastman Kodak Company Rochester, N. Y

J. E. Brulatour, Inc. 6706 Santa Monica Blvd., Hollywood. (HI. 6131)

Agfa-Ansco Corp. Binghampton, N.

Agfa Raw Film Corporation 6424 Santa Monica Blvd. (HO. 2918)

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Table shows new finder's wide adjustment range.

Close Working					Close V	Close Working	
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13.5 cm	4	feet	13.5	cm	4	feet	
15 cm	4	feet	15	cm	4	feet	
16.5 cm	4	feet	15	cm	4	feet	
18 cm	4	feet	16.5	cm	4	feet	
21 cm	6	feet	18	cm	4	feet	
30 cm	8	feet	21	cm	6	feet	
Telephoto							

Super Range Finder

LE KALART COMPANY announces a new Model Range Finder, designed for use on the 4x4¼ and 4x5 Speed Graphic cameras. This w range finder is similar in construction to 1. Model "F," now being installed on the 4x3½ Miniature Speed Graphic cameras at the taflex factory.

The new Kalart Model "F" Range Finder has eat adjustment range for accommodating auxary lenses and will automatically focus a lens closely as 3½ and 4 feet! It is possible to just this new range finder for use with lenses 10.5 cm to 30 cm Telephoto lenses. The acmpanying table shows its remarkable versa-

ity. It is claimed that no range finder previously ade would operate over such a lens range. The w Model "F" will focus down to four feet th an 18 cm lens; whereas range finders in the st have been limited to a near distance of x feet. Now Kalart claims that this is the t time in photographic history that a range ider has been produced which can accurately cus lenses of these focal lengths down to such ose distances. The new device will automatilly focus a film pack and cut film camera to a working distance of 31/2 and 4 feet; and is adjustable for interchangeable use of lenses to 30 cm telephoto!

In addition to its new features the Kalart Synchronized Range Finder Model "F" has still another advantage of great value. The mechanically inclined Speed Graphic owner does not have to send his camera to the factory. Like the Model "K" for other cameras, complete instructions accompany each Model "F" outfit. The complete line of Speed Graphic cameras can now be ordered complete with this new Model "F" Range Finder from Folmer Graflex Corp., who are factory installing the new range finder on all their models. The Model "F," complete with installation instructions retails for \$24.00. will be ready for delivery February 15, 1939.

Resistant Alloy

A NEW ALLOY, labeled Copper-Uranium-Ternary Alloy, by its manufacturers, P. R. Mallory Co., of Indianapolis, is claimed to offer superior performance and longer life for current carrying or heat-carrying elements of electrical machinery; and it also is said to have unusual resistance of many corrosive gases and liquids.

NEILL BALFILLS

atest patents of interest to photographers and motion picture technicians; olor, anti-static film, printing on plurality of positives; other new inventions.

By ROBERT FULWIDER

Last month the following patents of inerest to readers of International Pho-OGRAPHER were issued by the U. S. Patat Office. These selections and brief decriptions of new patents were prepared y Robert W. Fulwider, well-known Los ngeles attorney, specializing in patent nd trade mark counsel.

o. 2,138,097 — Copying Lenticular Photo-CRAHIC FILMS. Gerd Heymer, Germany, assignor to I. G. Farbenindustrie Aktiengesellschaft, Frankfort-on-the-Main, Germany. Application Dec. 6, 1935. In Germany Dec. 8, 1934. 2 Claims,

process of copying lenticular films onto a pree emulsion film by using an intermediate lm for the third color image.

o. 2,138,486—Photographic Developer. Ernst Fournes and Hans Diamant-Erde, Vienna, Austria. Application Dec. 20, 1935. In Austria Dec. 31, 1934. 8 Claims.

combined developer and fixer for films which icludes sodium thiosulfate, an organic develop-

ing agent, a caustic alkali, and a reducing sugar. No. 2,138,846—Color Motion Picture Produc-ING APPARATUS, Harry K. Fairall, Hollywood, Calif., assignor to Fairall Color Corp. Application July 29, 1932. 3 Claims.

A projector for color motion pictures which has a rotating shutter affixed to shaft and a color screen shutter rotatably on the same shaft, with means for driving the color screen shutter by the

other shutter.

No. 2,139,224—Method of Developing Motion PICTURE FILMS. William L. Douden, Philadelphia, Pa., assignor to Radio Corp. of America. Original application Aug. 31, 1934. Divided and this application Dec. 23, 1936. Claim.

A continuous process for developing motion picture films in which the film passes into a pro-cessing liquid and into a region in the liquid where the pressure is materially less than atmospheric to remove bubbles from it.

No. 2,139,689—Antistatic Photographic Film. Martin Marasco, Barlin, and Edmund B. Middleton, New Brunswick, N. J., assignors to Du Pont Film Mfg. Corp. Application May 15,

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1936. 13 Claims.

A cellulose-base film coated on one side with a light sensitive emulsion and on the other side with a polymeric amino-nitrogen containing organic compound.

No. 2,139,767—Buffered Photographic Film. Gale F. Nadeau, assignor to Eastman Kodak Co. Application Feb. 15, 1936. 12 Claims. A photographic film having a support, a sensitive emulsion layer, and a layer containing materials capable of producing a hydrogen ion concentration different from that of the emulsion.

No. 2,139,778—Antistatic Photographic Film. Alfred D. Slack and Albert A. Young, assignors to Eastman Kodak Co. Application March 1938. 12 Claims.

A photographic film comprising a support carrying a photographic emulsion layer and antistatic layer comprising a tauride containing sulfonic derivative radicals.

No. 2,139,806—Machine for the Continuous Printing of Negative Films on a Plurality of Positives at the Same Time. Maurice Albert Dalotel, France, assignor to Suzanne Rosalie Mathot, Paris, France. Application August 4, 1936. In France August 8, 1935. 11 Claims. A continuous projection printer for simultaneously printing a number of positives from a single negative, having a single light source, and narrow windows arranged one above the other for simultaneously projecting on each positive dif-ferent adjacent regions of the negative.

2,139,855—Apparatus for Photography WITH OR WITHOUT COLOR. Anne Henri Jacques de Lassus Saint Genies, Versailles, France. Application April 10, 1935. In France April 14, 1934. 4 Claims.

A device for taking pictures in relief on a lenticular film and having a pair of objectives with a complex lenticular screen between them.

No. 2,140,260—CAMERA ADJUSTING MECHANISM. Harry G. Cunningham, assignor to RKO Studios, Inc. Application March 31, 1936. 6 Claims.

An interchangeable lens mount for cameras, having a cam arrangement different for each lens, for moving the lens axially.

No. 2,140,540—Color Photography. Edmund B. Middleton and Andrew B. Jennings, assignors to Du Pont Film Mfg. Corp. Application Feb. 19, 1937. 12 Claims.

A color-forming photographic developer comprising an aromatic amino photographic developing agent and a diacylacetaminoaryl-bisazole.

No. 2,140,738—FILM GATE AND FRAMING MECH-ANISM. Chas. L. Fitz, assignor to Herman A. De Vry, Inc., Chicago, Ill. Application April 18, 1936. 5 Claims.

A film gate mechanism for motion picture machines in which one of the gate members may be moved toward or away from the other member, and the other member is spring-mounted so that it may slide along posts.

No. 2,140,847—Composite Layer Films for COLOR PHOTOGRAPHY AND THE PROCESSING THEREOF. Humphrey Desmond Murray and Donglas Arthur Spencer, assignors to Iford Ltd., Eng., and The Veracol Film Syndicate Ltd., London, Eng. Application June 21, 1935. In Great Britain June 25, 1934. 13 Claims.

A multi-layer color film with at least one of the emulsion layers containing a color forming development component.

No. 2,141,354—METHOD OF TREATING PHOTO-GRAPHIC FILM. Alan M. Gundelfinger, assignor to Cinecolor, Inc., Los Angeles, Calif. Application April 23, 1937. 8 Claims.

The method of bleaching photographic images which includes treating them with a solution of potassium iodide and then treating them with a solution containing iodine and from 1% to 4% potassium iodide.

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ON THE SET

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INSIDE FACTS ABOUT NEW **HOLLYWOOD TWOSOME**

By CHOLLY CATWALKER

In the short time he has been getting around in Hollywood, young Fast Film has become known as a choosy boy. He doesn't go for the bright lights as did some of his respected ancestors. Oh dear no! What illumination he has, must be smooth and discreet, without a trace of shadows or 'hot spots'.

That is where young "Baby" Junior of the Solarspots made a big hit with the newcomer, "Baby" Junior isn't very big, and never has been a bright-light type herself, but true to Solarspot family tradition. she's always beaming, with never a shadow or the faintest suggestion of a 'hot spot'. No wonder everyone says, "They seem made for each other!"



PRINCIPAL IN LATEST **HOLLYWOOD** ROMANCE

Latest portrait of "Baby Junior" Solarspot, reported by Hollywood columnists as seen everywhere with the sensational newcomer, Fast Film. Baby Junior comes from one of the most distinguished families in Hollywood. Direct descendant of the Solarspots, Senior and Junior, originators of smooth, shadowless spotlight-beams, Baby Junior traces her ancestry in an unbroken line to the first 'Inkies' to greet Panchromatic Film, direct ancestor of Fast Film, on arrival in Hollywood over a decade ago. This new linking of the 1939 generation of two famous families is singularly appropriate. singularly appropriate.

FAST FILM, SOLARSPOT "THAT WAY"

By WALTER WINDSHIELD

The latest in Hollywood romances is that Fast Film and the Mole-Richardson youngster, "Baby" Solarspot, are twoing, Following early encounters with the older, heavyweight members of the lighting family, reported to have left the celluloid newcomer thoroughly 'burned up,' F.F. and Baby Jr. have been going together with that old 'you were made for me' glint

The traditional baby of the Solar-

spot family is taking it big. As

who wouldn't? For years relegated like a haby sister to obsenre 'fill-in' tasks, suddenly promoted to key lighting posts illuminating glamorous stars, and paired romantically with the sensation of the day, Kid Fast Film himself? According to the grapevine and my girl Thursday, Baby Junior and Fast Film have been seen holding hands by practically all of the Supreme and Plus-X sets. From where I sit it looks like a steady combination, with the older members of the Solarspot family, Junior and Senior, chaperoning happily from the catwalk behind goboes and dim bulbs.

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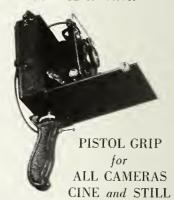
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INTERNATIONAL PHOTOGRAPHER

Vol. 11

March, 1939

No. 2

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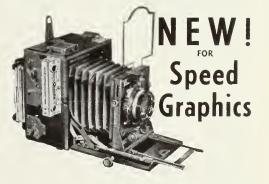
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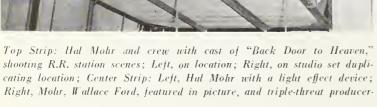














director-author William K. Howard; Bottom, Left: Special elevator platform rigged to shoot scenes at Republic burlesque house on 42nd Street off Broadway; Bottom Right: Mohr with his camera crew on location in Cleveland; at left. William Kelly, operative cameraman; center, George Stetzel, assistant; latter pair are members of Local 641, IATSE.

Out PHOTOGRAPHER

Only International Professional Journal of Motion Picture Arts & Crafts

NEW YORK TECHNICAL FACILITIES O. K.

Authoritative and factual report on the production situation in New York by a veteran Hollywood cameraman, with particular emphasis on service, technical crows, equipment available and comparative production expenditures.

By HAL MOHR

President, Local 659, IATSE

Whenever it becomes known that anyone is going to make a feature production in New York, a swarm of well-intentioned friends descends upon him to give him harrowing warnings of the difficulties they've heard will hamper his eastern efforts. If he is a cameraman, they'll tell him how someone told them that modern equipment couldn't be had—that studio and laboratory facilities were poor—and that he'd better be sure to take a Hollywood crew if he wants an efficient staff.

All with the best of intentions—and all entirely wrong!

Last fall I went to New York to photograph William K. Howard's production, "Back Door to Heaven." Before I left, relays of sympathetic friends took turns in warning me of all the troubles they had been told I must expect; naturally, I left Hollywood in a worried frame of mind, for we wanted a good picture, and most emphatically did not want it to be an uphill struggle against unfavorable conditions.

By Christmas, I had the answer. We had put the production "in the box." We had done it on an easy schedule, paying better than top salaries, and with no penny-pinching at any point. And, believe it or not, the job had been done at a cost considerably below what would be considered normal for making the same film in any major studio in Hollywood!

We had equipment at least equal to, and fully as modern as anything we might have expected in a Hollywood studio. My technical crew was fully as efficient and cooperative as any I've ever worked with anywhere. And even though the film has not as yet been previewed, all of us are confident that we have a more than ordinarily fine picture—one that will please both the critics and the box-office.

How was it done Well, let's start at the

beginning.

About the first thing I did after getting off the train and greeting producer-director Howard was to make a trip to the studio in which we were to work. This was the old Paramount East Coast studio, at Astoria, L. I., now known as the Eastern Service studio. The plant is run by a group of men who are really anxious to see it again producing outstanding features. Everyone, from the officials down to the laborers, were eager to do anything that would help us make our picture a better one.

The studio's big building includes one really big stage—as large as any in Hollywood—with several smaller stages in the basement beneath. Most of our sets were to be large, so we used the big stage almost all the time.

The studio itself was all right, but my heart fell when I looked over the lighting equipment. There hasn't been much feature production in New York for many years, and the lamps were largely old-tyle 18's and 24's—lamps which had been the last word nine or ten years ago, but which are now obsolete.

At this point, Eddie Fitzgerald, the studio's chief electrician, took me in hand. "Don't say it!" he told me. "I know what you're looking for. We haven't got it—but come along and I'll introduce you to the man who has." And he took me over to meet Charlie Ross.

Officially, Charlie Ross is the head of Charles Ross, Inc., the east coast distributor of the familiar Mole-Richardson equipment. To my delight, he had a plentiful supply of all the latest M-R lamps—Juniors, Seniors, Baby Juniors, H. I. Arcs and everything. We simply moved the biggest part of his rental stock over to the studio—and the lighting equipment problem was solved.

I can't say too much about the way Ross cooperated with us, Whatever we wanted, he provided somehow. If he didn't have it, he either made it or got it in a hurry from the M-R plant in Hollywood. For example, when I left Hollywood I had taken samples of all the little accessories which simplify work on the set—"barn doors," the latest types of holders for "jellies," "cellos" and similar diffusers, "gooseneck" flags and goboes, and the like. Some of them Ross was familiar with. Others were new to him. But he saw to it that when we were ready to shoot, we started off with everything we needed, down to the last detail.

With that off my mind, the next thought was for the laboratory problem. Our work was to go through Paramount's eastern laboratory, so I immediately put my prblems up to Frank La Grande, the laboratory chief. Here again I was met with incredible cooperation. I didn't think the plant's routine methods were getting everything from the negative? Very well, La Grande took time off from his regular routine to make test after test until things were coming through the way I wanted them. All this was done weeks before we started shooting.

At one time, when we were preparing to go into the process sequences, La Grande practically disrupted the whole plant's routine for nearly a week while he and I made tests of half-a-dozen different types of film, including Eastman Super-X, Plus-X and Super-XX, Agfa Supreme, Agfa Ultra Speed, and DuPont. For each of these he emptied his tanks and compounded one or more special developers, usually beginning with the solutions specified by the filmmakers, and then modifying the solutions and timing until we were getting what we felt was the most out of each film.

If, as we did on occasion, we were shooting special effect scenes, and wanted special negative development, La Grande would see to it that our negative got precisely the special treatment we wanted. In a word, he gave us laboratory cooperation of the sort that is too rarely seen anywhere now-days. It goes without saying that he gave us a fine job

that he gave us a fine job.

During all this time, I had also been cooperating with lloward in preparing the script and schedule for production. Howard was in the enviable position of being not only the director, but also the author of the story and producer of the picture. He is one of the men in this industry who appreciates not only the necessity of careful, pre-production preparation, but also the value of having the cameraman as a coworker during this preparatory period. There was plenty of details where my own experience could suggest short-cuts or economies which

On the Cover

Veteran boxer and long-time member of Local 37, IATSE, Jack Roper, who takes on world's heavyweight champ Joe Louis in Los Angeles title fight next month, photographed by Ray Jones, member of Local 659, IATSE, and studio still chief at the Universal lot, where Roper does his studio chores. An able fisticuffer, Roper is appropriately enough sergeant-at-arms of Local 37, having been popularly chosen for the office at recent elections. Although greatly under-rated by the sports writing "experts," Roper is coolly confident that he'll put up a great battle against the Brown Bomber, and has a lot of enthusiastic backing from studio workers for his coming title try.

might not occur to anyone but a cameraman. On the other hand, participating in these conferences gave me a better understanding of the meaning of cach scene and sequence, so that I could, when the time came, photograph it with greater assurance and better effect.

When we finally were ready for production, New York gave us a teclmical crew of as enthusiastic and capable men as anyone could ask for. On the cameras were Bill Kelly, operative; George Stetzel, assistant; and Eddie Bagley, stillman, all from International Photographers' Local 644, IATSE. Jimmie Sheehan was gaffer, and Jimmie Gartland, better known as "Goggles," was head grip. From start to finish, to us he was simply "Goggles," as he is to everyone in New York—and one mighty fine grip.

Meantime, Howard had been assembling his cast and staff. Johnnie Walker was associate producer, and Bill Salter technical director. Among the players were such troupers as Wallie Ford, Patricia Ellis, Stu Erwin, Bert Frohman and Van Heflin. The latter two are newcomers from radio, and they seem bound to make a big mark in pictures. Their parts didn't run to much footage, but they handled them in a way that puts them among the big moments of the film.

The prologue of the picture is played largely by children—and there's another high spot in the picture! These children are absolutely new to pictures, but they turned in some swell performances. The very fact that their faces are new to the screen makes their work still more refreshing. One of the real advantages of eastern production is this fine supply of new faces and talent.

In another way, we were extremely fortunate. The production set-up was such that we had neither schedule nor budget to adhere to. We were to make the picture—and that was that. We actually shot for about forty-five days and brought the picture in for about a third less cost than would be expected in Hollywood.

This was done in spite of some conditions which some of us here have been advocating for years, but which many others denounce as prohibitively expensive. We worked on a five-day week, with one exception only in the daytime, and paid top salaries. My own crew, for instance, were all paid well above scale requirements; I began by putting operative Bill Kelly on at the regular New York scale for first cameraman, and the others in proportion.

As I say, we only worked one or two nights during the entire picture. These were nights when we had to, as we were using a burlesque theatre where we couldn't start work until after the regular show, which finished about midnight.

The only regular night work encountered by anyone on the picture was in building the sets. Here, we ran into an item of expense unfamiliar in Hollywood, but in our case necessary. The New York carpenters, set-painters and the like automatically go on double-time rates when they work at night. Our sets were all so large that they had to be built on the studio's one big stage, which naturally meant that when we finished one set, it had to be struck and the new one built on the same stage at night.

In spite of all these so-called economic hazards, we turned out a great picture, without skimping on anything, and for an enviably low cost.

Why? I think one of the main reasons was that everyone concerned in making the picture was satisfied. He was being well paid, and his hours were such that he never had to work when "played out." He could always give his best efforts—physical and mental—to his work. And with satisfied workers, everyone was able to concentrate on the job, rather than giving half his energy to damning the boss or worrying about his union's or guild's battles with the producers or any other organization—or, for that matter, without worrying about the fifth race at Santa Anita! In a word, we were all there to make pictures. We were being paid well for doing that and nothing else. We all of us—from the

labor gang up to producer-director Howard-could feel proud of what we were doing. Naturally, we put everything we had into doing it well.

Another vital factor was the fact that in every respect our production paid only for what it actually used. There was no studio overhead to take a five or six figure bite out of our production bankroll. There were no accumulated salaries or carrying charges for unused contract players, to pyramid expenses,

Also important in the set-up-this time, from the dramatic and box-office angle-was the fact that we began with a good story, and Howard was able to cast for story rather than rewrite to suit stellar "names." As a matter of fact, the script was submitted to a couple of "name" players in Hollywood, with the idea of using them in the production. In each case, the results were the same—"It's not bad I might be interested if you'd write my part up here, there and elsewhere, and write that other part down!" revisions would have changed the story into a stereotyped "formula" vehicle, which wasn't what either Howard or his backers wanted. We cast to fit the story and my prediction is that "Back Door to Heaven" will have a success similar to that of "The Informer." With no spectacular star names for advertising, it will open slowlyand build up at the box-office on word-of-mouth boosts from audiences who see it.

Now, what does all of this add up to?

As I see it, it means that the pessimists are wholly wrong about the difficulties of New York production. From my own experience, I know that it is possible to make an "A" production in New York more efficiently than the same production could be made under present conditions in Hollywood. On the other hand, I do not believe the same possibilities exist for making low budget productions so successfully in the east. Here in Hollywood, we have a vast supply of standing sets and the like which can be reused, virtually without cost, for program pictures, while in the east, everything would have to built for the purpose.

But for the "A" picture, eastern production offers definite advantages. The producer pays only for what he actually uses, and escapes exorbitant charges for overhead, "accumulations," and the like. As a result, he can take more time, work shorter hours, and pay higher wages all along the line—all of which make happier working conditions and give better, more efficient work that pays dividends in a better result on the screen.

From the technician's viewpoint, the fact that New York is 3000 miles from Hollywood is nothing to worry about. Ideas and ability aren't measured in miles, and the supply of both good men and good equipment is ample in New York. Moreover, with satisfied workers and rational working conditions, you find your co-workers really cooperating.

From the equipment standpoint, as I've tried to point out, a cameraman from Hollywood can feel quite at home. The big raw film companies offer the same service in New York that they do in California. Most of Hollywood's key equipment firms have capable, cooperative representatives in New York for the same sort of service. And these representatives are men of the finest type. Charlie Ross, for example, who was so helpful in solving my lighting problems, is a man every cameraman ought to know—and would like when he knew him. And he gives New York the same friendly, intelligent lighting equipment service that his associates, Pete Mole and Elmer Richardson give us here in Hollywood.

As far as cameras and camera equipment and service go, Frank Zucker's Camera Equipment Company deserves the same sort of praise. What the studio didn't have in the way of camera accessories, Frank either had or built. And he has a really fine Mitchell camera mechanic to rectify any mechanical trouble that may arise.

The laboratories, as represented by my experience with Frank La Grande and the Paramount

lab, know more about cooperation than some local plants I could name.

In fact, the only technical weak spot I detected was in the matter of process equipment. For our process work, I had to send to Detroit to get Wilding's installation. Those I found in New York weren't equal to the precision demands of our job. It would really pay some of Hollywood's process firms to follw the example of Mole-Richardson and the others, and establish an eastern representative who could supply their latest equipment as Ross does lamps or Zucker cameras.

But to reduce it all to the simplest phrase, the people in New York know the real meaning of cooperation. If you go there to make a picture, you'll find everyone in there doing his best to help you make it a good one—striving to make you feel both technically and personally at home, even if you are 3000 miles from Hollywood.

CINECOLOR'S new \$250,000 Burbank plant, corering 45,000 square feet of a three-acre site, opened last month for operation. The modern concrete reinforced structure was designed by Architect Robert V. Darrah. New facilities and equipment provide new accuracy, flexibility, economy and speed. The new setup will immediately make available processing service at the rate of a million feet per day. Accompanying illustration show air view and front elevation of new plant. Continuing under the guidance of Alan Gundlefinger, widely known in the field of colored motion pictures, Cinecolor's technical division embraces a complete patent research department, technical library, research room, control room, optical rooms and darkrooms. The plant has been designed to bring 100 per cent efficiency to handling of film. Modern rooms hare been progressively laid out for camera unloading, negatire polishing, printing, waxing, positive cutting, optical printing, inspection and shipping. Included are a machine shop, special effects camera department and private cutting rooms. Processing of all types of color negatives is carried on in one room 70 feet wide by 200 feet long, containing machinery for printing positive films in 16 mm and 35 mm-in both two and three colors. Basement in the new plant has been specially designed to accommodate 50 rats used in mixing of chemicals for developing. Vats range in capacity from 1,000 to 20,000 gallons. Circulation in each is controlled by its own indiridual motor. All electrical wiring and pipes for water, gas and fire sprinkler system hare been installed in a scientifically ventilated tunnel, to prevent possibility of their being affected by chemi-DC sets are also located in this tunnel. With an anxiliary power plant for use in emergencies, in the event of power failure, auxiliary plant will pick up the task of supplying current with a maximum interruption of only 10 seconds. An undrillable steel door seals the entrance of huge new raults for storing film. Equipped with fire sprinkling system and other norel safety features, they assure full protection. Special air-conditioning equipment has been designed for regulating lumidity and temperature throughout the building, with indiridual sectional control. For convenient riewing of rushes and test prints, a theatre seats 75 persons. Special study has been made of equipment in general use to insure projected picture being consistent with standard theatre projection. Business staff, headed by A. L. McCormick, president and treasurer, includes: Alan Gundlefinger, ricepresident in charge of research; W. T. Crespinel, vice-president; and J. Henry Kruse, sales manager. Construction and installation of equipment was under the super-rision of William Prynne, secretary of the company.

NEW p&H developing process

Amazing results in exposure latitude, sharpness, contrast control, depth and quality for engraving reproduction demonstrated in special tests made exclusively for *International Photographer* under technical supervision.

AMIDST THE WELTER of claims and arguments over film development methods, practices and materials, a new technique developed in Hollywood, and now available commercially, strikes off on a slant that, in addition to its interesting and simple theoretical approach, has produced

amazing practical results. The new system is known as the P & H Process. It is now available for all types of still photography development, and has been tested satisfactorily in experiments in motion picture development.

Results obtained with badly exposed neg-

atives over a wide range of stops and speeds, plus the enhancing effect the process has on good negatives, are illustrated most effectively in the accompanying illustrations. Also, contact prints of a Leica roll, photographed especially for International Photographed especially for International Photographed ender prescribed conditions, are published herewith. All these pictures were photographed on one roll, and all were processed on the one roll in one operation.

The scenes were photographed consecutively, from the same position and under a virtually constant light value. All lens stops from f:3.5 to f:18 were used, with shutter speeds ranging from 1/20 to 1/500 of a second over each stop. The processed roll and the contact prints were examined by a number of technicians before being sent to the engraver and the printed record published herewith was absolutely unretouched. The layout was photographed by the engraver's camera in one operation. Note that all these contact prints from the negative could be handled in enlargement to get a possible reproduction.

The P & H Process introduces an entirely different technique to laboratory practice. Briefly, the process is a simple means of incorporating into the emulsion the active developing agent, in a quantity only necessary for the development to a predetermined density. This is based upon the fact that a fixed quantity of developing agent can only do a fixed amount of work.

To develop by the P & H Process the film is immersed into a solution of active ingredients for a short time (only for saturating the emulsion) and then passed through a combined squeegee and wrapping device in which the emulsion is sealed onto a smooth chemically inactive surface where the development takes place.

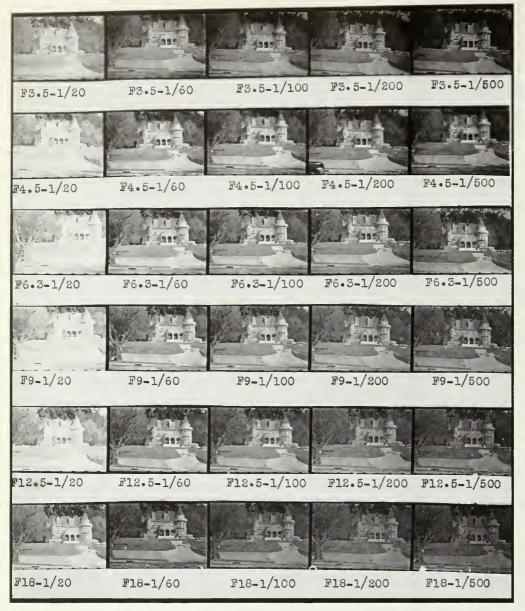
Development then proceeds as follows: The highly-exposed areas or highlights quickly exhaust the developing agent in those areas and development stops: while the action in the lower exposures is slower and development continues until the developing solution in these areas becomes inert.

By controlling the concentration of the solution the development of the highlights can be stopped at any predetermined point, while the shadow detail and middletones are built up—thus providing a simple means of control of contrast.

However, the process makes possible much more than this. In its use the film is differentially developed. This is due to the fact that the process utilizes advantageously the bromides and iodides thrown off in the chemical reaction that takes place in re-







This demonstration of the P&H process development of one Leica roll to secure negative over a wide range of stops and speeds with every shot printable, is fully described in accompanying story.

ducing the silver halide in the emulsion to metallic silver.

The quantity of these products thrown off in the reaction are in exact proportion to the amount of silver reduced, and the amount of silver reduced is in exact relation to the light striking the film in exposure. Hence, as the solution sealed into the emulsion combines with these products of reaction a differential development takes place in each area of different density. Each density area generates and balances its own formula in the exact relation to the exposure of that area. This results not only in contrast or gama control, but also greater depth, finer detail with sharp lines of separation and third dimensional effect, which is apparent in the comparison sample prints on Page 9.

In the development of Leica, Contax, Argus, Kodak, and other miniature camera rolls and cut film the process is very simple and fool-proof. Time of development is unimportant, as development cannot proceed

further than the quantity of active ingredients incorporated into the emulsion. Fine grain is a natural characteristic of the process because the quantity of solution used is not enough to cause a swelling or softening of the emulsion which permits the silver grains to group or clump.

Another important characteristic is an increase in film speed. Using the fastest film, tests have shown an increase in film speed to 400 percent. In photographing, one has much greater latitude in making exposures. If within 200 percent over or under the correct exposure, one can still be sure of a negative that will produce a good print.

A balanced formula is used in the process to combine with the products thrown off in the chemical reaction which takes place, and although different from the conventional formulas, it is very simple and inexpensive. Chemical costs are much lower for the reason that all of the solution is actually used, and insomuch as no develop-

ment takes place in the solution it never becomes contaminated with the products of development.

Apparatus has been built and now is available for roll and cut film. Work is being done on equipment for the commercial photographer and motion picture film, which will be available in the near future.

The new system, which has already provoked astonished interest from a wide variety of studio technical experts in preview tests and demonstrations, is a development by its inventor, Frank Perry, in association with Herbert Houston. Perry is a commercial photographer and photofinisher; while Houston is well-known to readers of International Photographer as the designer and manufacturer of much special Hollywood studio equipment from laboratory machines and optical printers to camera cranes. He recently returned from three years spent in the various film production centers of the world on assignments to design and install equipment. The new process derives its trade name from the Perry-Houston initials.

Further details of this system, particularly its application to continuous motion picture processing, along with technical data on tests now in progress, will appear in early issues of International Photographer. A salient point is that the procedure cannot be accomplished successfully without the use of patented devices marketed by the P & H organization.

For comparison of P&H with usual development, see opposite page, technical data on which follows:

(1) Film, Agfa Superpan Press; Weston meter reading zero: exposure: f.22—2 seconds; development; P&H processed.

- (A) Film, Agfa Superpan Press; Weston meter reading zero; exposure f.22—2 seconds; development normal, D-7 formula.
- (2) Negative; Eastman Portrait Pan; exposure: 4 seconds, f.22; camera Eastman View Camera, 5x7; negatives for prints (2) and (B) were made under average lighting conditions; the overall density of both were about the same, but note the sharper detail and definition in print (2) as compared with (B).
- (B) Negative; Eastman Portrait Pan; exposure, 4 seconds, f.22; camera: Eastman View Camera, 5x7; developed in Eastman D-7 formula.
- (3) Film: Eastman Portrait Panchromatic: light meter reading 3½ Weston; exposure, f.32—9 seconds; development, P&H processed.
- (C) Film: Eastman Portrait Panchromatic; light meter reading 3½ Weston; exposure, f.32—9 seconds; development normal, D-7 formula.
- (4) Negative; Agfa Superpan Press; exposure, 1/25 second, f.16; camera, 4x5 Speed Graflex; developed by P&H process.
- (D) Negative; Agfa Superpan Press; exposure, 1/25 second, f.16; camera, 4x5 Graflex; developed in Eastman D-72 for-















For technical data on these comparison shots of development of same scenes by standard methods and P&H system, see Page 8, Column 3.



mula.

The comparison between (4) and the print (D) shows great latitude of the

P&H process; portions of these negatives were both over-exposed and under-exposed; also, note shadow detail and defi-

nition of print (4) as compared with (D); note that highlights of (D) are washed out, while good detail is retained in (4).

fundamental photographic physics

Reference material on photographic physics in unusually handy and orderly form for filing is feature of Chapter II of new volume, "Basic Photography," by Don Hooper, tobe published in installments in *International Photographer*.

By DON HOOPER

In all the wealth of photographic literature no little space has been devoted to photographic physics; and every expert technician has his favorite reference volumes to which he turns frequently for assurance on one point or another. Seldom, however, have the simple fundamental photographic physics facts been compiled in such neat handy form for easy reference as they appear in Chapter II of "Basic Photography," published last month by Don Hooper, a frequent contributor to International Photographer.

This comprehensive volume is the result of much research work done by Hooper in connection with the presentation of photographic education courses in the Los Angeles high schools and in private classes on photography. In hine with International Photography policy of presenting reference-worthy material, and through the courtesy of the author of "Basic Photography," the verbatim text of Hooper's Chapter II on Photographic Physics will be published in this and succeeding articles along with the illustrations that accompany the text in the published work.

The numerals in parentheses in the following text refer to the page numbers on which the material appears in the original edition of "Basic Photography."—ED.

(5) INTRODUCTION

We have said that photography is the art and science of forming images by the agency of This chapter will deal with the subjects of Physics and Optics as they involve photography. Optics is a branch of Physics which deals with the formation of images by means of lenses. It is beyond the scope of this text to cover these subjects thoroughly enough to enable the student to make calculations of lens curvatures, spectroscopic tests and other matters requiring a high degree of technical knowledge. However, a fairly comprehensive study will be made of the properties of light, the formation of images, the various types of lenses, and their errors, corrections, care and uses. It is the idea of this chapter to have the student regard tenses not as pieces of ordinary glass, suitably shaped and mounted, but as the cumulative results of a century of mathematical calculations and experiments by many scientists. With this in mind, and having a working knowledge of the properties of lght and its application in photography, the student is prepared for the proper use of his photographic equiment later on.

LIGHT

It is difficult to give a clear and simple definition of light. However, for our purposes, it is sufficient to regard light as being caused by vibrations or waves in a hypothetical substance which permeates all space, and is called by scientists the ETHER.

TRAVEL BY LIGHT

When direct sunlight enters a darkened room through a small opening, the path of the light can be traced along its course by means of the lighted dust particles in the air. It will be noted that the light path appears as a straight line when viewed from any angle. Various theories have been advanced and upheld to prove that light does not travel in a straight line, but for our purpose we will be entirely safe in stating that light travels in straight lines from its source. We will call the sunlight coming into the room a BEAM of light. A slender beam is denoted as a PENCIL, and the finest portion of a pencil is called a RAY of light. For our purpose a RAY will be designated as a straight line. Thus, we can represent light from a minute source as an infinite number of rays, or straight line radiating in all directions from the source. At or near the source, they will be close together, producing strong light waves, but farther from the source, they gradually spread out, corresponding to weakening of the light waves.

REQUIREMENTS FOR TAKING A PHOTO-GRAPH

We have discussed the essential parts of a camera, and find that in the pinhole camera, these are few. Modern cameras employing lenses require an accurate method of controlling the light admitted to the sensitive materials, and means of focusing, or securing a sharp image. The six requirements for taking photographs are as follows: (1) LIGHT; (2) the SUBJECT, of which the photograph is taken; (3) the LENS; (4) the SHUTTER, for controlling the amount of light admitted into (5) the DARK BOX, forming the image on (6) the LIGHT-SENSITIVE MATERIAL. Many other features are incorporated into modern cameras, but they merely add to the case of taking photographs, without being absolute requirements.

VISION

Although there are many sources of light known to us, we are accustomed to think of the sun as the main source of light. In passing through a finite medium, light waves are either TRANSMITTED, ABSORBED, or REFLECTED. All substances which transmit, or allow the passage of light waves through them, are called transparent. Substances which do not transmit or allow the passage of any light waves through them at all are called opaque. Opaque objects either absorb or reflect the light waves that fall on them. Black is not, as is commonly thought,

New Department

International Photographer's new department of news of photographic personalities, will get under way in the April issue, with such items as tips from Bob Coburn on still exposnre with the new fast films; notes from Ray Fernstrom on his eastern trip photographing unusual shots and occupations in Cinecolor; suggestions Eddie Linden on standardization of high speed photography technique; and notes on the activities of mem-bers of the studio technical crafts. IATSE members, and particularly members of Local 639, are urged by Chairman Leon Shamrov of the magazine committee to communicate with Herb Aller or Ed Gibbons with any suggestions or news notes for this new department.

a color, but rather the absence of color. In other words, objects appear black because they absorb practically all the light waves falling on them. Light waves that are neither transmitted nor absorbed, are reflected, and it is by reflected light that all objects, which are not sources of light, are visible.

Very few objects that we see, shine by their own light, as can readily be found by taking them into a dark room. They merely reflect the light that shines on them. This light is reflected from them in all directions, and they are visible by means of the particular rays of light that shine from them which pass into our eyes.

(7)

REFRACTION

The ability of a lens to form an image is dependent on the power of glass to refract light rays. Refraction is the deflection of a ray of light from a straight line when it enters a transparent medium of different density at an oblique angle. In other words, the ray is bent upon entering the medium. The most common example of this is the apparent bending of a straight stick standing at an angle in clear water. Light waves travel at different speeds in different transparent substances. They travel slower through glass than when in space.

There is a simple rule for determining the direction in which a ray of light is bent in passing from one transparent medium to another. In passing from the air into a denser medium, such as glass, the ray of light is bent TOWARD the NORMAL at the point where it enters. Passing out of the glass into air, the ray is bent AWAY from the NORMAL. By the NORMAL, we mean a line perpendicular, or at right angles, to the surface at that point. Referring to Figure 3, we have the oblique ray of light AB striking the surface of the glass plate P at an oblique angle. If the ray were to continue in a straight line, it would emerge from the glass at the point E. But following the rule just given, it is bent toward the normal RS and emerges from the other surface at C. Upon entering the air, the ray does not continue on its path BC towards F but is bent away from the normal XY and follows the path CD on through space. two surfaces of the glass are parallel, the ray CD will be parallel to the ray AB, but slightly offset. Let us consider now the ray MN, which enters the glass normal, or at right angles to the surface. In this case, there is no refraction of the ray, and it continues straight on through the glass and emerges into the air at O and continues on in a straight line toward P.

FORMATION OF IMAGE OF A POINT

Figure 4 is represented by a thin circle of glass, having spherical surfaces, and forming what is known as a double convex lens. Owing to the constantly changing angles at which parallel rays enter and emerge from this lens, these rays will all meet at, or near, the same point. This means that the rays are "brought to a focus." For example, we will take two rays AA and note that they are brought to a focus, or intersect at A'. Now let us take the point B nearer the lens than the point from which the parallel rays AA came. Rays of light, represented by these lines, are not parallel, and upon passing through the lens, we find them intersecting at the Point B', FARTHER from the lens than A'. Light rays from the point C which are nearer the lens than B will, upon passing through the lens, intersect at C', farther from the lens than B'. From the above, we

notice that rays of light from a point are brought to a focus by the lens, and that the position of this point is determined by the position of the point from which the rays come. We also observe that parallel rays of light, coming from a distant object, are brought to a focus nearest the lens. These parallel light rays we assume are coming from a source at an infinite distance from the lens, and after passing through the lens, the distance from the optical center of the lens to the intersection of these rays is called the FOCAL LENGTH, or "infinity focus" for that particular lens. This focal length is always the same for each lens, and cannot be changed.

FORMATION OF ACTUAL IMAGE

Having learned how an image is formed by rays of light coming from a single point, we will contemplate the formation of an image composed of a (9) number of these points. In Figure 5, we can consider the arrow AB as reflecting rays of light in all directions from its enentire surface. Some of these rays strike the surface of the lens and are refracted in passing through it. We will take two rays of light from the head of the arrow which strike the surface of the lens at different points, and two rays from the tail of the arrow which also pass through different parts of the lens. We find that rays from A intersect at A' and form an image of the head of the arrow, also that rays from B intersect at B', forming an image of the tail. Between A' and B' we might draw in an unlimited number of conjugate points of rays coming from points along the shaft of the arrow AB. Thus an inverted image of the arrow is formed on the opposite side of the lens.

SIMPLE LENSES A LENS is a portion of a refracting medium (usually glass) bounded by a plane and a spherical surface, or two spherical surfaces, which have a common axis. Thus far in our work we have taken up only the double convex lens. We will now take up the various types of simple lens forms, in preparation for a study of the combination of these forms into the modern lenses. In Figure 6 are shown the six simple lens forms, which are divided into two groups. These are the CONVEX, or CONVERG-ING, lenses, and the CONCAVE, or DIVERG-ING lenses. These two groups are often referred to as POSITIVE and NEGATIVE lenses, respectively. Lens of the convex group all have power of bringing parallel rays of light to a focus, or converging them, after passing through the lens. The concave lenses, however, do not bring parallel rays of light to a focus, but spread, or diverge them, after passing the lens.

(10)

LIMITATIONS, DEFECTS OF SIMPLE LENS

The image formed by a simple lens consisting of but one of the forms shown in Figure 6, is subject to several serious defects except when it is formed in the following manner: The lens used being very thin in comparison to its diameter; only the central portion of the lens being used, and light rays of but one wave-length being transmitted to form the image. Obviously, modern photography would not be possible with these limitations, and it was found at an early date that combinations of various lens forms would greatly reduce the errors inherent in the simple types. For this reason, modern photographic lenses are composed of from two to eight of the various simple forms, or elements.

These elements are mounted in CELLS, and one or two of these cells form the complete lens. A lens formed of two cells is often referred to as a DOUBLET, and such a lens is called a symmetrical or unsymmetrical doublet, depending on whether or not the two cells are identical. The definition of a lens as previously given will now be extended to include any combination of simple lens forms which go to make up modern compound lenses.

Following are the principal defects common to simple lens forms: 1. Sperical Aberration; 2. Chromatic Aberration; 3. Distortion; 4. Curvature of Field; 5. Flare; 6. Astigmatism.

SPHERICAL ABERRATION

This may be defined as the inability of the lens to bring the rays that pass through the edge of the lens to the same focus as those which pass through its center. (See Figure 7.) This will prevent the formation of a sharp image at any point, every detail being more or less hazy in outline. The trouble is overcome in the simple lenses by limiting the size of the diaphragm, or stop, as it is often called, to an opening considerably smaller in diameter than the lens. This will shut out the marginal rays and prevent them from functioning in the formation of the image. It is also overcome to a great extent in the better lenses by combinations of negative and positive elements.

CHROMATIC ABERRATION OR COLOR DISEASE

When rays of what we call white light pass through a simple lens, they are separated into their component colors, and these colored rays come to an intersection at different points along the axis, as in Figure 8. It will be noted that the red rays intersect further away from the lens than the blue-violet rays, and the various other colors are found somewhere between these These colors are broadly divided into two groups, one composed of blue and its related tints, the other of the reds and yellows. The rays of the first group come to a focus in a plane nearer the lens than the others. Summing up, we may say that CHROMATIC ABERRA-TION is the inability of a lens to bring the various colored light rays to a focus in the same This defect is overcome or greatly reduced by making lenses of two elements which have different refractive powers, and with their curvatures so calculated that each neutralizes the color aberration of the other.

(12)

DISTORTION

This error causes straight lines in the subject to appear bent when they occur near the margin of the picture. In a simple lens, distortion is primarily a consequence of spherical aberration. The lines tend to bow outward, forming what is called BARREL distortion, or to mow inward, forming the PIN-CUSHION distor-Barrel distortion is produced by having the stop placed in front of the lens, while the Pin-Cushion distortion occurs when the stop is placed in the rear of the lens. Figure 9 illustrates barrel and pin-cushion distortion of a square. This effect is readily overcome by placing the diaphragm between two simple lenses, or two compound lens cells, mounted in a barrel and having their convex surfaces outward. Such a combination is called a RECTILINEAR lens (rectifies lines). Ditsortion cannot be overcome in a single cell lens, though by using only the central portion of the lens, distortion can be considerably minimized.

(13)

CURVATURE OF FIELD

As the distance from the lens to the edges of the image field is greater than the distance to the center of this field, the area of sharp focus is naturally concave, or saucer shaped, instead of lying in a flat plane such as is represented by the focusing screen or the surface of the film. As a result, when the center of the field is in sharp focus, there is a gradual falling off in definition, or in sharpness of the image toward the edges. Conversely, when the edges are in sharp focus, the center of the image is more or less blurred. Figure 10 illustrates this defect; the dotted line A'B' shows the position of sharp focus of the image of the arrow AB. Curvature of Field can be reduced, as in spherical aberration, by the combination of negative and positive elements, and also by using only the central portion of the lens. Curvature of Field is more pronounced when the lens covers a wide angle, and all lenses except good anastigmats have this defect to an appreciable degree when used at their widest opening. When a lens has been corrected for curvature of field, it is said to have a "flat field."

FLARE

This defect exhibits itself as a circular or semicircular patch of light appearing on the focusing glass, and consequently on the finished photograph. It can be due to many causes, but can, in most cases, be attributed to light rays of strong intensity which enter the lens and, by double reflection, appear as a double image, the false image being blurred and irregular in shape. FLARE can also be caused by the edges of the diaphragm aperture being worn bright, and this may account for its sudden appearance in a photograph. COMA, a form of FLARE. is the appearance near the margins of the field. of a pear-shaped (14) blur of light, caused by spherical aberration of oblique pencils of bright light. When a distinct double image in widely separated parts of the field is formed, this phenomenon is called a GHOST. These defects are largely overcome by careful lens manufacture, and the avoidance of any strong lights in the object photographed, also by keeping the edges of the diaphragm opening blackened. Figure 13 illustrates Flare.

ASTIGMATISM

This is the inability of the lens to bring to a sharp focus at the same time. lines running different angles to one another, especially when they appear near the margin of the field. If a wheel-shaped diagram, as in Figure 12, be used as a test chart to focus on, all the spokes, or radii, may be brought to a sharp focus at the expense of definition to other groups. If astigmatism is present in a lens, it can be reduced in the same manner as some of the other defects by using only the central portion of the lens. Astigmatism is corrected in the manufacture of lenses by carefully selecting the optical glass used, accurate calculation of lens curvatures and the highest degree of skill possible being employed in the lens manufacture, Lenses corrected for this defect are called ANASTIG-MATS, and in addition to correction for astigmatism, embody corrections for all other defects previously discussed.

(15)

TYPES OF LENSES

Practically all lenses in professional use now are of the Anastigmat type, although lenses that are not so highly corrected are occasionally used. Following will be given a brief description of three types most commonly used, with illustrations of each type.

(16)

SINGLE ACHROMATIC LENS

This type of lens is not, as its name may indicate, composed of but one element. Two or three elements having different curvature and refractive powers are cemented together into one cell which is positive meniscus in form. A typical combination is a positive meniscus of crown glass and a negative meniscus of flint glass. Another combination is a flint glass negative meniscus element between two crown glass positive elements. Achromatic lenses, as their names indicate, are corrected for chromatic aberration. They are, however, subject to all other lens defects. The chief objection to this type of lens is its excessive spherical aberraton and distortion when used at full lens opening. To secure an image that is sharp to the margins and free from distortion with this lens, it is necessary to use a very small lens opening. Achromatic lenses are usually mounted with their convex surfaces facing the film and with the diaphragm placed a short distance in front of the lens. Within their limitations, lenses of this type are capable of producing very good results, and because of their low cost, they are usually fitted to the less expensive cameras.

RAPID RECTILINEAR LENS

This type of lens gets its name from possessing a greater speed at full aperture than the single achromatic lens and also because of the fact that it is corrected for distortion, i.e. (straight lines in the subject appear as such in the image). It is essentially a doublet composed of two single achromatic lens cells placed a suitable distance apart with their concave surfaces

facing each other and with the diaphragm between them. The reverse position of these cells supply the correction for distortion. When both cells are of the same construction and focal length, the doublet is termed SYMMETRICAL. With this type, either of the cells can be used as a single acromatic lens and the focal length of each would be approximately twice that of the doublet. The cells of the rapid rectilinear lens may be of different local lengths and when this is the case, the lens is called a Triple Convertible, since either or both cells may be used to give a choice of three focal lengths. The focal length is the shortest when the two cells are used together. The medium focal length is generally with the front cell removed, using only the rear cell; and the longer focal length is generally with the rear cell removed, using only the front cell. Spherical aberration in the rapid rectilinear lens is considerably reduced, which permits the use of a larger aperture than when using the single achromatic lens. It must be remembered though, that when but one cell of a rapid rectilinear lens is used, it is subject to the same limitations as the single achromatic lens.

ANASTIGMAT LENS

Lenses of this type possess all the corrections for the defects previously mentioned. The anastigmat lenses from reliable firms are made of the highest grade material and by the most skilled workmanship possible. Anastigmat lenses have a flat field and should be used, when copying maps, drawings, etc., where sharp focusing is required over the entire image. The corrections for astigmatism were made possible by the introduction of Jena glass. However, there are other varieties of high grade optical glass which have been introduced and used during recent years.

Anastigmat lenses vary greatly in details of construction, some being composed of two corrected combinations which may be used separately as in the triple convertible rapid rectilinear lens, while others are complete in one cell, (17) which is composed of many elements of different construction and refractive powers, these being dependent upon each other for full correction. Sometimes these elements are so arranged that one element is slightly separated from a cemented pair of elements, making what is called the airspace type. In this type, the air space acts as an additional element. In other types of anastigmats, these elements are all cemented together. An anastigmat doublet lens may be composed of two of the cemented type cells, or two of the air-space type cells, or one of each type,

Various manufacturers use different lens formulas in order to achieve or embody all these corrections. It does not matter which type of anastigmat lens you use, as all of them are corrected for the same lens errors.

SIZE OF THE IMAGE

The size of an image formed by a lens is dependent upon two things: the distance of the object from the lens and the focal length of the lens. For example, if we find the image to be two inches long when the object is 100 feet from the lens it will be only one inch long when the object is 200 feet from the lens. Now keeping the same distance of 100 feet from the object, if the image is one inch long when using a lens of six inches focal length, it will be two inches long when using a lens of twelve inches focal length.

DETERMINING FOCAL LENGTH OF LENS

Of the many methods of determining the focal length of a lens, only two will be given here. Both of these require the use of a camera with a long bellows extension. In the first method, the camera is adjusted so that the image of a well marked scale will be exactly life size. A ruler marked in inches is a good scale to use for this. When this has been done, remove the lens from the camera, and measure the distance from the inner surface of the ground-glass to the surface of the scale. One-fourth of this distance is the focal length of the lens used.

The second method is as follows: focus the lens on a very distant object, and when a sharp

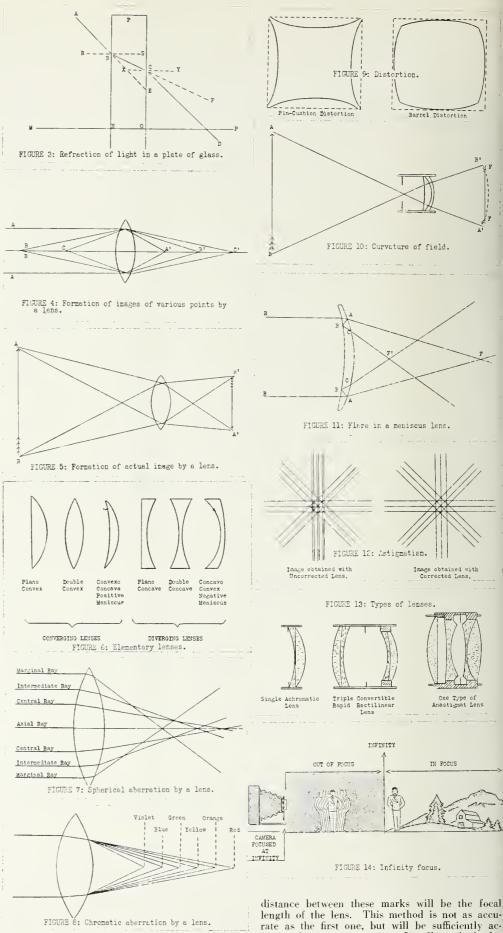


image is obtained, mark the position of the camera front on its bed. Without moving the ground-glass, focus the lens on a scale until a life-sized image is obtained. Again mark the position of the camera front on the bed. The

length of the lens. This method is not as accurate as the first one, but will be sufficiently accurate for most purposes. In all methods for determining the focal length of a lens, the diaphragm should be used at its greatest opening.

FOCUSING

We have stated that for each lens there is but one focal length, which is constant for that



These illustraitons of the photographic effectiveness of properly used fog filters, were made by George Scheibe to illustrate accompanying story. To secure most effective printed comparison, ordinary shot at left was printed on matte paper, while fog effect shot of same scene at right was a glossy print.

lens, and that it is the disance from the center of the lens to the point where parallel rays of light intersect. From this we see that no object will form an image closer to a lens than the focal length of that lens. Lenses are often called by their focal length such as a 12-inch lens, a 13½-centimeter lens, or a 50-millimeter lens, etc.

etc.

There is only one point, or one plane, in which an object will form a sharp image after passing through a lens. This can readily be seen by looking on the ground-glass, which is used for focusing with many comeras. Objects are sharp, or in focus, in only one plane and nearer or more distant objects are blurred or out of focus. If we desire to bring the nearer, (18) or more distant objects, into focus, we must change the position of the focal plane by moving it back and forth, closer or further, to or from the lens. This operation is called FOCUS-ING. A very simple rule to follow when focusing is this: For distant objects or "infinity focus," the lens is nearest the ground-glass or focal plane, and we focus on nearer objects the lens is moved further away from it.

From the diagram in Figure 14, it will be seen that infinity is the place nearest any lens that an object can be in focus when everything beyond that object is in focus. Infinity can be brought clearer to the camera by using the shorter focal length lenses. This can also be accomplished by reducing the size of the lens aperture. (See Depth of Focus, Page 21.)

CIRCLE OF CONFUSION

Anastigmat lenses are highly corrected for all defects and errors common to simple lenses, but it is impossible to remove all of them entirely. The result of any optical error remaining in the corrected lens is to project the image of a point as a circle of measurable size. (An exception to this is astigmatism, which projects a point as a line.) This image circle of a point is called the CIRCLE OF CONFUSION, and the aim of the lens designer is to reduce the diameter of this circle to a size which will not be appreciable to the normal, unaided, human eye, i.e., about 1/200 of an inch. A point projected to this diameter is considered sufficiently sharp for most purposes. Lenses for high grade miniature cameras are ground to a circle of confusion of 1/750 of an inch or better. This enables negatives made with these cameras to be enlarged many diameters without great loss of definition. The circle of confusion of any lens can be ascertained from the manufacturer by supplying him with the serial number of the lens. (To Be Continued in April Issue.)

fog effect filters

By GEORGE SCHEIBE

MY FIRST ORDER for a fog filter came in in 1916. I was rather puzzled at the idea. After all, why should anyone want a fog filter, when the real thing could be photographed? On further investigation the subject is not that simple. Natural fog cannot be controlled easily to give the fog effect photographically, especially at night, when the lights used for motion picture production, and even street light and other illumination, shine through the fog like so many searchlights. During the daytime, natural fog does not show up strongly in a picture, most especially in those taken at close range.

So I set to work to try my luck at making fog filters. After considerable practical experimentation, I gradually developed various densities of fog filters that satisfied the demands of the motion picture cameramen, who are always looking for some new and improved technical adjunct to their work.

The effects obtained with these filters were ideal, natural as the real fog would be. The fog filters did the trick of producing fog for film at any time, day or night. Whenever the script calls for fog, cameramen now put on the proper density of filter. There's no waiting for fog. It can be had at a moment's notice. The fog filters are here to stay and are getting more popular every day. Properly made fog filters require no increase in exposure and will give you the kind of fog you want in your pictures.

The following filters are the ones to be had: No. ½ and ¼ are for early morning mist or atmospheric haze. The No. ½ is for very light fog effect. The No. 1 is for fairly light effects. The No. 2 for medium, and the No. 3 for heavy effects. No. 4 is for a "London fog" effect; and I send many fog filters to London where they have plenty of fog.

The No. 5 is a graduated type and will produce effects heavy in the distance and very light in the foreground. They can be used from any side of the camera - a high fog or low fog and an incoming effect. Any kind of an effect can be had with these filters. I once made a graduated fog filter for a Hollywood studio 3"x 22", and it was successfully used. It showed an incoming fog effect in the scene and it became more foggy as the filter was drawn before the camera. Since 1916 our organization has made thousands of fog filters, and they have done wonderful work. Try them on miniature cameras and in fact on any kind of camera and you will find that they produce fine results. The lighter fog filters, up to No. 1, can be used at night.

(This is another of a series of short articles on effect filters by Hollywood's long-time expert manufacturer of unusual filters for special studio use. Watch for another shot at filters by Scheibe in an early issue of International Photographer.)



Bob Coburn, ace stillman member of Local 659, IATSE, this month's Close-ups subject, photographed by brother member Ned Scott.

CLOSE-UPS

Bob Coburn: High school pole-vaulting got him into pictures

Bob Coburn grew up with photography and the motion picture industry, but what plopped him into his present position as one of Hollyywood's outstanding still photographers was entirely outside the sphere of either. As a youngster at Hollywood High School, Coburn developed quite a reputation as a pole-vaulter. His first picture job was earned on his soaring talents.

In 1916, two-reel comedies, which like vaudeville have passed into the show business limbo of nostałgic dodo-ism, were being ground out on every lot, and Jack White, producing Ben Turpin comedies, called the high school to get an expert pole-vaulter to double for the cross-eyed comic. School authorities sent Coburn. He must have made good in more ways than pole-vaulting, for he spent succeeding school vacations as film-loader, assistant and all-around stooge to Billy Beckway, well-remembered by members of Local 659 as an able first cameraman.

In those days the cameraman shot his own stills. Coburn had been a camera bug since his boyhood on a Montana ranch, and he showed such an enthusiasm for this branch of the game that Beckway turned the still photography over to the youngster. Still photography became Coburn's hobby as well as work, and when Local 659 was organized and the various classifications of work laid down, he chose still photography. He's been at it ever since, and pretty regularly, for Coburn is the type of thoughtful, modest and quietly competent craftsman whose talents usually are in demand.

Coburn's personality is reflected in his neat offices and dark-room headquarters on the United Artists lot. The walls are shared equally by specimens of expert shooting for big game and still pictures. Photography and hunting split honors among the journals on his desk. Coburn is an unusual type, reflecting sincere artistic enthusiasm without any of the temperament and "aestheticisms" so frequently flaunted by artistic personalities.

These qualities, which enabled him to "get along" with such a pronouncedly masculine director as John Ford as his favorite still photographer for many years, probably trace back to his boyhood on a Montana ranch, from which his father, Wallace A. Coburn took the family to Hollywood during his high school days. His boyhood hunting and fishing developed into his favorite hobby while his favorite boyhood hobby, photography, became his life work. At the age of ten, Coburn had a homemade darkroom in which to experiment with the shots snapped from a camera he carried on his saddle-bag. He learned his photography through the practical trial-and-error method, without picking up any of the cant and poseur technique that marks so much photography today.

Coburn believes in the theory that the photographer should himself do as much of every phase of the work as possible. Working on the UA lot, under Samuel Goldwyn, a producer, who knows, not only the business values of good stills, but also their good and bad points technically to a surprising degree. Coburn and his fellow stillmen at UA are permitted to do just that. They frankly attribute the results they get as much to the system as to their own efforts. No reformer, Coburn believes the big mass production lots might benefit in their still results from switching over to some sort of more personalized unit system, such as has worked out so successfully at UA.

Coburn is under personal contract to Goldwyn, and without red-apple-ing the boss, believes that other producers might well follow the examples of Goldwyn, DeMille and others of a small group of alert production minds, who personally examine the still results every morning and make it a point to know the practical, technical, artistic and exploitation angles of still photography. Such producers consider the stillman as an important part of their sales program. How right they are is indicated in the quality standing their productions have in the industry.

Technically, Coburn believes in simplicity, accuracy and complete mastery of the technical aspects of photography to the point of routine so that the photographer is free to let his mind work on the set toward composition, characterization and emotionally effective still pictures. This again is a reflection of his personal practical study of photography as a boy.

His regularly used equipment consists of an 8x10 Ansco, rebuilt to his own specifications to insure absolute sturdiness in operation, and with a carefully selected array of lenses; another 8x10 for portraits, also with special lenses and a conveniently operated tilt-head; a Contax II; and the press style 4x5 Speed Graphic. Coburn's equipment is as devoid of accessories as possible. His insistence upon simple, practical equipment amounts almost to an anti-gadget mania.

Technically, Coburn matches this equipment with careful and lengthy test of the characteristics of various films and what his favorite lenses will do with such films. Every element of photography—films, lenses, laboratory handling—have been tested to insure as much depth of field as is possible and logical for every picture. And that, in a nutshell, is why Coburn's stills stand out. They are not composed on the routine flat plane that marks so much still and newspaper photography. This technical mastery of the exact stop and speed permissible—until a routine handling of these elements is possible—permits full freedom to get the best composition, the most dramatic effect and a general roundness and third-dimensional effect that characterizes Coburn's stills.

Coburn is not inclined to get involved in the purist vs. whatis controversy over photographic technique, but he obviously leans toward the group that believes the composition and general effect should be planned and determined at the time of snapping the bulb. His insistence on methodical and thorough knowledge of what the photographic equipment will do is mixed with the natural resistance of most practical photographers toward playing too much with the negative. He seldom takes a chance on revising or improving the composition or the technical factors in blowup.

All of which adds up to the fact that Coburn believes that good photography is a worthwhile artistic accomplishment, and like any medium where technique is important—be it playwriting, football, golf, hunting, brick-laying or motion picture production—it can best be mastered by doing, and not by reading or talking about. Trial and error—with emphasis on the error. That's what teaches the burnt print to avoid over-exposure.

Surprisingly enough for so practically-minded a photographer Coburn is one of the few Hollywood still photographers who never had any newspaper experience. He grew up with the picture business, and is still willing to learn. And as a member of the magazine committee in charge of the management of International Photographer under the chairmanship of Leon Shamroy, he believes that the present discussion about Hollywood stills, started by John LeRoy Johnston and carried on by Jimmy Doolittle this month should result in a continued open forum that all readers of International Photographer should join in for the betterment of the craft.—Gib.

THEY MUSTN'T STAND STILL

A few "impertinent remarks" directed to the industry's "recognized publicity expert" on still photography, anent his much discussed article taking the Hollywood still situation apart in February issue of International Photographer.

By JAMES N. DOOLITTLE

Nothing that I've read in the International Photographer has gotten quite so deeply beneath my cuticular fabric as the two articles by John LeRoy Johnston (see International Photographer, September 1937, February 1938). This circumstance derives not from the fact that we are friends of years standing nor that I have worked with and for him.

His words are those of wisdom nurtured in the fertile soil of experience and in a field quite close to my own interests.

On occasion, he has been dissatisfied with certain of my meager efforts and always unsatisfied with the best.

Words of commendation for a job well done are as spontaneous with him as condemnation for a "natural" that has been muffed. One always knows where he stands as well as how one stands with him.

Now that the apple has been burnished, I'm tempted to try and make an argument out of this despite the fact that we're, in he main, in perfect agreement. But while a good ruckus will attract a crowd, it doesn't settle a thing.

Every statement made by John Johnston is merely a recounting of facts shouted into the ears of stillmen ever since the genus homo photographica non moto was snawned.

While the necessity for some sort of shouting is conceded, nothing seems to have come of it. "Stills are better" than those of fifteen years back principally because they have tagged along in the wake of a general improvement in production technique. Cameramen have become "cinematographers," gaffers are "illumination experts," and so on. But stillmen are still stillmen!

Qualifications for the rank and file of the still photographers go little farther than the assumption that he is adept in the use of an 8x10 camera plus a little luck with a Graflex or Graphic. It is the concern of nobody that he has had some grounding in the elements of laboratory practice and theory nor that he possess the less tangible instincts of lighting and composition. Mainly, he is a composite of two types; master of the art of self-effacement while commanding diplomatic pugnacity. His zeal to turn in quantitative proof of his daily activity causes him to get in the way of the staff, in the hair of the actors and in wrong with the director. Even the assistant director has been known to build up a sort of antipathy for his desire to prove that the day's work wasn't a matter of standing still!

I have seen an entire company draped about the set in various postures of repose, hour after hour, during a working day because some individual up front slipped (or slept) and the stillman all but massacred because he wanted ten or twelve minutes in which to do his daily stint. "Holding up production" if you want it in familiar words.

"Good stills result from inspiration and honest enthusiasm—" True, John, true. But just you

Last month we introduced "a man who needs no introduction" in John who needs no introduction" in John LeRoy Johnston, Walter Wanger's publicity director, who leaped onto the Hollywood still picture situation with both fcet; and this month "here we go again," with apologies to Phil Harris. Jimmy Doolittle needs no introduction to any reader of International Photographer. A founder member of Local 659, his outstanding photographic work, including scores of color magazine covers, and his unquestionable literary talents as evidenced by articles in such national journals as *Popular Photography* and the accompanying follow-up on "John LeRoy" stamp him as one of the aces of the photographic game or "racket," as Jimmy loves to describe it. No story in International Photographer in recent years has provoked as much discussion as Johnston's article last month. We hope to continue this series indefinitely, with Johnny and Jimmy as masters-of-the-revels. Why Jimmy as masters-of-the-revels. not join in if you have a construc-tive idea that fits in with the discussion? If you don't want to be quoted, why not write to either of them, care of International Photographer, and suggest that they wield their facile pens over it?

come on the set some bright, sunny morning about two-thirds through a production with your head full of hot ideas and your spirits 'way up in the grids, sit around 'till almost lunch-time while the ace "cinematographer" is putting on his act, suffer through a couple of rehearsals and the final takes, only to hear the assistant director shout, "That's all for now, folks; back on the set at 1." Of course your enthusiasm isn't all shot by this time, but it doesn't leave much to go on for the rest of the day.

Read scripts? I've read reams of them, built up a lot of fairy castles that I'd like to shoot, and dreamt dreams that I'd like to materialize into usable stills only to see the castles crumble and the dreams vanish into vapor. By nightfall, I'd settle at a nickel a ton for the best ideas in the world.

But the stillman will be asked: "The stuff was there—why didn't ya shoot it?" You haven't asked, so I'll answer by asking you one: "Have you ever heard of tardy schedules or exhausted budgets?"

John, I've seen hundreds of photographs that I've wished I had made, but never a production still that I'd care to have my name on. Situations? I've seen thousands that I fairly itched to photograph but there were usually eight or ten good reasons why I couldn't do it. I believe any sincere still photographer approaches his task with a high enthusiasm, but twenty years has seen a lot of good boys swap passion for complacency.

The editors of LOOK, LIFE, CLICK, PIX—phooey! If they have "raised their sights" it was only to get them far enough above the mud to keep clear of the law. Magazines and newspapers have no Hays office—yet! Which is the reason our stars

may be photographed in night spots behind a barricade of glasses and bottles and with expressions that creep upon one after the ninth. Sure, the public goes for it just as they did for the early motion pictures when a lady had no more secrets than a goldfish.

By and large, editors crave pictorial matter as near to the pornographic as they can get by with. And that's pretty darn near. But can you imagine a stillman shooting that kind of stuff on a picture set? Not twice, you can't. We deplore the anna" in the run of production stills, but how much that's really exciting during a day's work that might be gotten with a candid camera would pass the critical scrutiny of the star who is privileged to O.K. the stills in which she appears. Haven't you seen them rip off the corners of thousands of prints simply becaues a teeny-weeny shadow crossed the Luxefied, Factorized cheek? And did you ever encounter that exalted individual who had but one good side to her face and insisted upon presenting this one phase to the camera? Fat chance of getting anything striking from such material no matter what one's fund of passion, enthusiasm or inspiration.

While I concede some merit to the posed shots of the "whispering chorus" accompanying your article illustrative of the technique of sotto voce dialogue as practiced by the lesser actors, I harbor some doubt that an editor would find much to rave about from a news angle without some stellar "weight." However, the point is well taken until we start to speculate as to what might happen if there had been a star in any of those shots. The dramatic lighting that distinguishes most of these wouldn't have done at all for the "big name" because the dramatics of lighting has a way of bringing out wrinkles and accentuating features that give retouchers a livelihood.

Don't you see the limitations, John? News pictures demand action, novelty. Yet, have you ever stopped to observe how comparatively little action or novelty there is in the run of even exceptional productions? Long-shots, unless there be some scenic phenomenon that is startling, have little publicity value because the "merchandise" is lost on the shelves, Close-ups are really nothing more nor less than carefully posed stills wired for sound. They get the most careful lighting of which the cameraman is capable, and that means broad concessions to the little lady whose name burns up so many amps on a theatre marquee. Let the stillman step in there, start pushing lamps around for about five minutes in an effort to give the shot some "character" and the Local would have another member on the "available" list!

Your advice to do more outdoor fashion photography is the best you've offered because it is entirely feasible, but let the subjects be models rather than stars. To be sure, the latter wear the best and are accustomed to the atmosphere of the show-case, but compared to a trained model they are the posiest posies one could encounter. Exceptions, to be sure, but I'm speaking broadly.

The amateur is indeed a pest who "eats, sleeps and drinks pictures"—and, in all probability, would make a lousy still photographer. But he has only one individual to please and he is easily satisfied. The stillman can be an amateur at heart and convey all his enthusiasm to the studio with him but, too often, he might just as well check it at the gate so when he returns home he can eat, sleep, and drink—if he can find nothing better

I honestly believe the best boys in the game

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are not doing the best work of which they are capable. I think, too, they'll admit it. And I know the answers. They alone, of the entire production staff, are the individuals who, with a responsibility far above their salaries, work almost without cooperation from the front office downward.

Does a cameraman have to exercise tact, diplomacy, aggression or passion to do his stuff? And does his art sell a single picture? Or even help to? A good story, well directed, adequately cast and properly staged, will sell despite ordinary photography, but you cannot give away ordinary stills. And stills are the honey that draws the flies!

In the field of advertising photography a single photograph of a group of paid models will command a price not far below the weekly salary of a star and appear on the printed page as a sales medium for a five-cent article, yet the photographer whose product helps to sell a million-dollar production is called upon to "grab a still.

The idea seems to prevail that shooting stills is but the matter of setting up a camera, hollering for the lights, coaxing the cast into position and shooting some simulation of fragments of action

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as occurring before the movie camera. Such, indeed, has been the usual procedure; hence the usual stills.

But let's see. Right off, motion picture lighting is all wrong for stills. It has been arranged for a certain continuity of action where the individuals move about and must at no time run into dark spots or find with a turn of the head an unfavorable shadow where a shadow has no right to be. In short, light must be everywhere. There's too much light. Not in over-all intensity but geographically, if you follow me.

Then there's the matter of backgrounds. Continuity demands that actors be photographed with careful attention in logical progression through a given sequence. On the screen this is so darned important that a slight slip-up would hopelessly confuse an audience. But in a still, it is of no consequence whatever; unless the shot depends upon that background for its pictorial effectiveness. The latter consideration has reference to "location" stuff rather than studio set-ups. But on the stage, the still photographer has little opportunity to interrupt the show long enough to pose his subjects where the background would be an accessory rather than an interference to the principals.

Back in the dark ages, actors knew at least some of the rudiments of pantomime. The older troupers still haven't forgotten. But just let a stillman try to wheedle the latter-day artists into a few simple gestures that would put over an idea without dialogue and they'd better start looking into that museum watchman vacancy!

So what? Nothing. Things are going on and on just as they have been. Stillmen will still shoot stills under the same handicaps as always or until some director of publicity goes into a huddle with the PRESENCE and says in a firm voice, "Lissen here, chief, you've got a million dollars invested in this here production. I gotta have a good photographer — not just one who will work at the scale — but a hot shot; a high-priced guy with a lotta art so I can get a flocka stills that'll help you get some of your money back."

After the D. of P. has picked himself up and dusted himself off, let him go right back into the office with grim determination and, thumping the desk, just as though nothing had happened, continue: "And I want you to go down on the set and tell that director, the star and the staff that the artist of the still camera (not the stillman - mercy me, no!) is to be given a reasonable amount of time to light, compose and shoot every situation in which he recognizes sales possi-

Then, when the director of publicity returns from the hospital, let him call me up some evening; we'll put on our carpet slippers, light up our pipes and go passionately complacent.

RCA EQUIDMENT **PREVIEW**

LAST MONTH Southern California projectionists came to Hollywood as guests of International Photographer and RCA for a midnight preview party to inspect the new RCA Photophone projection equipment, and to hear it ably described in an authoritative manner by L. A. Goodman, national service expert, who visited Hollywood for several weeks with E. C. Cahill, national service executive.

Fred Parrish, stillman on Selznick International's "Gone With the Wind," dropped in on the party with the editor, and snapped the shots for the layout on Page 20, of studious projectionists and their RCA hosts, rushed the prints up the next day—then the trouble began. After a morning of trying to identify all the visitors, the editor and Paul R. Cramer, contributing editor on projection matters, decided to let the projectionists write their own captions.

Hence, International Photographer offers a year's free subscription to the first ten most nearly accurate lists of names of projectionists pic-tured on Page 20, submitted at the Interna-TIONAL PHOTOGRAPHER office by midnight of March 25, 1939. Final decision in event of disputes will be rendered by the business agents or secretaries of the various Southern California projectionist locals of the IATSE, who should know their own members, if anybody does.

In order to make the going easier, projectionists need not identify the group in the upper

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left picture, since they are the RCA hosts, reading from left to right: A. B. Jackson, L. A. Goodman, George Urey, Earl Spicer, Frank Harris, E. C. Cahill, H. Tremaine, W. H. Freiselbaum, Charles Smithson, R. G. Benjamin and Harold Madison.

This layout by Fred Parrish, Local 659, IATSE, of preview showing of new RCA equipment staged last month by RCA and International Photographer, is described in story on Page 18. Projectionists! Name your brother members shown here and win a free subscription to International Photographer!

first rear projection specifications

First installment of the complete text of the Academy Research Council's special subcommittee's report on the industry's initial agreements by studio and manufacturing company—experts on minimum standards for process effects.

Last Month the Academy Research Council released to the industry the first authoritative report on rear projection process equipment, laying down minimum specifications agreed on by the industry's experts. Full text of the report will be published in INTERNATIONAL PHOTOGRAPHER in installments during the next few months. Each installment will be accompanied by picorial layouts featuring the outstanding xperts in the process field and the modern new equipment developed for this important branch of motion picture production. In the following text, the numerals at the left in parenthesis indicate the actual page numbers of the Academy report, which are referred to frequentl yin the text.—ED.

PREFACE

In furthering developments in process projection equipment and technology, the Research Council of the Academy of Motion Picture Arts and Sciences is carrying out its fundamental purpose of assisting to achieve new production economies and furthering technical progress.

Process projection methods continue to become increasingly important:

Economically, they offer opportunities for still greater savings in production costs.

Technically, developments in equipment and technique continue to expand the possibilities in this field until, some day, it will be the exception, rather than the rule, to send a cast on a distant location.

Artistically, as this equipment and technique is further developed the extent of its use will be limited only by the imagination of the production personnel; whereas, up to the present time, the equipment has been the limiting factor and only the ingenuity and resourcefulness of the technicians have made its wide use possible.

The Process Projection Equipment Committee of the Research Council, under the chairman-ship of Farciot Edouart, of Paramount Studios, was appointed in March, 1938. The committee went into immediate conference to plan its program.

Eleven meetings and two demonstrations, consuming approximately one thousand man hours, were held, and at least an equal amount of time was consumed by the committee chairman and members in conferences, preparing for meetings, tests, and demonstrations, and preparing this

This report, therefore, represents over two thousand man hours of technical effort and combines the views of approximately fifty experts

the field of process projection.

The Research Council gratefully acknowledges the cooperation of the National Carbon Company for sending its Research Director, Mr. David Joy, to Hollywood in connection with the development of carbons for process projection work, Mr. Joy remained in Hollywood approximately three weeks conferring with the compittee

The Research Council also gratefully acknowledges the cooperation of the Bausch & Lomb Optical Company for sending its representatives, Mr. Haller Belt and Mr. Alan Cook, to Hollywood in connection with the development and standardization of optical systems for process

projection work. These men remained in Hollywood two weeks conferring with the committee and individual members of the committee.

and individual members of the committee.

The Council also gratefully acknowledges the cooperation of the International Projector Corporation, the Mitchell Camera Company, the Technicolor Motion Picture Corporation. the General Electric Company, the Mole-Richardson Company, Paramount Studios, RKO-Radio Studios, and Selznick International Studios, in the work of this committee to a far greater extent than is ordinarily required of participants in the Council's program.

In presenting this report to the industry, it is only proper that the Research Council commend every active member of the committee for his part in this important project.

This report presents, for the first time, the coordinated viewpoint of the majority of the Ilollywood studios on this subject and should be of great value to all the studios and to the manufacturers of process projection equipment.

NATHAN LEVINSON, Acting Chairman, Research Council.

FOREWORD

The material included in this report has been prepared by the committee after thorough consideration of the basic requirements necessary for such an equipment as well as the refinements and developments to be expected in the future. The specifications and recommendations contained in the report have been prepared for the guidance of the engineering departments of

the producing companies participating in the Research Council cooperative technical program in purchasing new process projection equipment.

Copies of the report have been distributed through each company's representative on the Council to the proper officials in each company.

Copies of the report are also available, upon request, to all process projection equipment manufacturers, or companies manufacturing particular parts of such equipment, to be used as a guide in the designing, testing, and manufacturing of equipment, and to commercial organizations doing background process or miniature work for the motion picture producing companies.

As part of the program, the committee has made tests on a number of particular recommendations contained in this report to determine their practicability before inclusion in the report.

In order to clearly specify the relative importance of the various recommendations included in the report, each sub-heading in each part is indicated by one of the three following classifications:

BASIC

Recommendations so indicated incorporate definite requirements and principles. (Printed in bold face type.)

AUXILIARY

Recommendations so indicated are suggested

The active membership of the Process Projection Equipment Committee consists of:

The active membership of the Process Projection Equipment Committee consists of:			
Farciot Edouart, Chairman	Paramount Studio		
F. R. Abbott	Bausch & Lomb Optical Company		
J. A. Ball	T I I W . D C		
Jack Burrows	20th Century-Fox Studio		
F. C. Coates	Mole-Richardson Company		
Ralph Densmore	Paramount Studio		
Arthur de Stefano	National Theatre Supply Company		
Jack Durst	International Projector Corporation		
E. II. Fender	Mitchell Camera Company		
Charles Handley	National Carbon Company		
Frank Harris	m m as a		
Winton Hoch	Technicolor Motion Picture Corporation		
Stanley Horsley	Universal Studio		
Fred Jackman			
Wallace Kelley			
Grover Laube			
TO I TO	United Artists Studio		
	Paramount Studio		
E H O	Columbia Studio		
TT TTT TO			
Elmer Richardson			
W. II. Robinson, Jr			
William Rudolph			
Roy Seawright	Hal Roach Studio		
W. B. Slaughter, Jr	Metro-Goldwyn-Mayer Studio		
Glen Slipper	B. F. Shearer Company		
Otto Staplefeld	Zeiss-Ikon Corporation		
Herb Starke	RKO Theatres		
George Teague	Universal Studio		
William Thomas	Warner Brothers Studio		
Howard R. Trissel	Trissel & Landers, Inc.		
Glen Wahl	Carl Zeiss, Inc.		
Vernon Walker	RKO-Radio Studio		
George H. Worrall			
Frank Young			
Arthur Zangg	Paramount Studio		
A. C. Zoulis	Paramount Studio		

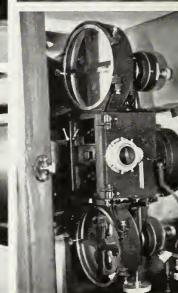


LEFT STRIP: Verne Walker, RKO-Radio Center, George Teague, Universal; bottom, Farciot Edouart, Paramount; three outstanding studio process department heads. Edouart is chairman of ARC special committee that prepared re-port on process equipment. CENTER STRIP: Three views of Paramount's triple projection head for giving 290 per cent illumination in projecting backgrounds as against single projector. RIGHT STRIP: The RKO-Radio portable rear projector, shown open and closed, and at bottom, the automatic re-wind developed at that studio nearly two years ago and now used on several other lots. This device developed by Walker's department insures accurate return of film to starting point in proper sync, when retake is desired, thus saving about ten minutes per shot against re-threading system.



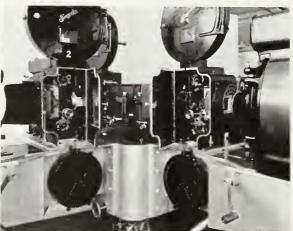












methods of meeting basic requirements. (Printed in light face type.) ACCESSORY

Indicates optional special refinements which add to the ease of operation of equipment. (Printed in italic type.)

Since the very inception of transparency process projection methods, it has been found in general that available projection equipment for this type of work is principally composed of an assembly of units never originally designed in their entirety nor engineers to be combined and worked together in such capacity. Basic elements of these assemblages were never intended to fulfill and meet such strict rquirements as have been imposed upon such equipment by the consistent demand for higher quality rear projection results, and of the ever increasing scope required in the present stage of the motion picture art.

These recommendations are based upon MAXI-MUM LIGHT DELIVERY with the following primary requisites: ABSOLUTE STEADINESS of the projected picture with a MINIMUM OF LIGHT VARIATION on the screen, and INCREASED EFFICIENCY OF THE LIGHT.

The designer and manufacturer should regard any tolerances affecting these three principles as concessions to practicability, and any method of decreasing these concessions will be considered definite advancement in design.

FARCIOT EDOUART, Chairman, Process Projection Equipment Committee.

PART 1 THE BASE

CONSTRUCTION (Basie)

The base shall be so designed that it provides: (1) A rock-like stability during operation, when locked off, and facilities for panning and tilting with absolute smoothness and precision; and (2), sufficient portability so that the whole equipment may be easily moved about on its special carrier or dolly on the recording stage by not more than two men.

CONSTRUCTION (Auxiliary): It has been suggested that this portability be accomplished by the use of a special carrier or dolly of the four-wheel type (on which the base will be mounted), equipped with solid rubber tires to insure safety and stability during movement of the equipment. The wheels should have the ability, free from any side play or sway, to swivel and lock off in any direction for possible dolly shots. To increase stability, suitable jacks should be provided to lift the equipment off the wheels for stationary shots. Adequate bubble levels should be provided for leveling up the equipment.

PAN AND TILT MECHANISM (Basic)

In the design of the base, provision shall be made for a free-moving and easily operated tilt and pan mechanism, giving a smooth movement when in operation, but including a positive locking device, giving locked-off stability equal to the stability obtained were this pan and tilt mechanism not provided. There should be no backlash or play whatsoever in the pan and tilt mechanism and means for adjustment should be provided to keep all working parts tight at all times. (See "Rotation of the Projector Head," page 18.)

PAN AND TILT MECHANISM (Accessory): The design of the base should also provide for the addition, when required, of a variable speed motor control of the pan and tilt mechanism, operating remotely from the camera position. The design of this remote control mechanism should provide for a gear ratio in the order of 900 to 1 between the drive motor speed and the speed of operation of the tilt and pan mechanism (to minimize over-control) as well as a gear box providing two lower gear ratios, making available all the necessary different speeds of opera-

PAN AND TILT MECHANISM (Accessory) MINIMUM DEGREE PAN AND TILT (Basic)

The base shall be designed to provide an angle of pan of at least 15° to both right and left of the center line between the projector and the screen, making a total minimum horizontal coverage of 30° and to provide an angle of tilt of at least 10° above and below the horizon, making a total minimum vertical coverage of 20°

INTERCHANGEABILITY (Basic)

The base shall be so designed as to allow for free, quick interchange of projection heads and lamphouses, registered with dowel pins or other positive means so that a minimum of adjustment is required for lining up when a change in head or lamphouse is

INTERCHANGEABILITY (Accessory):

In the event that devices other than the regular base mentioned above are provided to hold the projection head and lamphouse, the base on which the projection head and lamphouse rests should be designed so that projection heads and lamphouse are easily and quickly interchangeable to such devices.

SOUND INSULATION (Basic)

The base shall include sound insulation to eliminate the transmission of noise. (It has been observed that sufficient sound insulation has been provided by insulating the setting jacks of the dolly with hard rubber.

However, it must be remembered that any material so used must not, in any way, detract from the absolute steadiness of the whole equipment.) (See "Maximum Noise Level," page 21.)

HEIGHT OF OPTICAL AXIS (Basic)

The base and special carrier shall be so designed that the equipment's optical axis, when parallel to the stage floor, shall be 5' 6" from the stage floor.

THE LIGHT SOURCE

EFFICIENCY OF THE CARBON LIGHT SOURCE (Basic)

The type and size of carbon shall be carefully chosen for maximum efficiency in relation to the selected type of optical system and lamphonse.

EFFICIENCY OF THE CARBON LIGHT SOURCE (Auxiliary)

It is recommended that all motion picture producing companies and commercial organizations using process projection equipment follow the manufacturers' rated burning conditions under which the maximum efficiency and minimum flutter and flicker are obtained from the carbon light source. (See "Light Control," Page 14.) It is further recommended, to insure freedom from moisture or dampness, that carbons be kept for 48 hours before use in an electric heating oven operating at not to exceed 125°F.

TOLERANCES IN THE STRAIGHTNESS OF CARBONS (Basic)

Carbons for process projection shall be so selected by the manufacturer for straightness and concentricity of the core, that when burned in a lamphouse developed and constructed to meet these Recommendations, the equipment shall be able to fulfill the Toler-"The Feeding Mechanism," ances under page 9, as well as the recommended "Tolerances in Light Variation of the Light Output," page 4.

MAGNETIC SHIELDING (Basic)

The current to the arc shall be so conducted into the lamphouse that no magnetic fields disturbing to the arc are set up.

INCANDESCENT LIGHT SOURCE (Basic)

It is recommended that further development work be conducted on incandescent and hi-pressure mercury vapor lamps for general and special application to background process projection.

POWER SUPPLY (Auxiliary):

It has been suggested that a separate power supply be provided for the light source, inasmuch as a constant line voltage to the arc is imperative to accomplish the results to be obtained from equipment meeting these recommendations.

PART III

MAXIMUM VARIATION IN LIGHT OUTPUT OF EQUIPMENT TOLERANCES IN LIGHT VARIATION OF THE LIGHT OUTPUT (Basic)

The design of the whole equipment shall be such that the illumination from the carbon are light source approaches as closely as possible the steadiness of an incandescent source. In any event, the amount of light variation during the projection of a scene shall be less than $\pm 2\%$ per minute but with a maximum of $\pm 5\%$ for any consecutive nine minute shooting period.

This tolerance is to apply only after a proper crater has been formed in the arc. DEFINITION OF LIGHT VARIATION

(Rasic)

There are two distinct types of variation in the light output of an arc lamp, which can be designated as "flicker," viz: a sudden sputter or brief increase or decrease in brightness, and as "fluctuation" (flicker may be caused by the core of the positive carbon having different consistency in varons spots, causing the arc to momentarily sputter, or by sudden air drafts or misdirected magnetic flux, or by misalignment of the negative carbon with respect to the crater. Fluetnation is a mechanical or electrical problem and is caused by off-center rotation of the crater, the carbon feeding in an irregular manner, crooked carbon, or disturbances in the line voltage), viz, moving in a slow wave of increasing or decreasing brightness.

FLICKER — METHOD OF MEASUREMENT (Basie)

Flickers are generally too fast to be measured by any presently known meters, but shall be measured by photographing a clear screen illuminated by the arc lamp sonrce. Each frame of the exposed, developed negative, over given portions, can then be read on a densitometer. (It is recognized that this method of measuring flicker may not be the most accurate, due to variations in film development, but is one simple means available at present. The committee will welcome suggestions on more accurate methods which may be devised.)

FLUCTUATION—METHOD OF MEASURE-MENT (Basic)

Fluctuation can be easily read and recorded with an accurate, sensitive lightrecording photometer.

PART IV THE LAMPHOUSE

General Recommendations Applying To Both Mirror and Condenser Type Lamphouses

CAPACITY AND OPTICAL SPEED (Basic) Recommendations covering capacity and optical speed for each type of lamphonse are given in that Section of this Part of the Report specifically applying to each type of

NOISE LEVEL (Basic)

lamphonse.

The noise level of the lamphouse in operation shall be 3db below the noise level specification given for the whole equipment in that Part ("Noise Level," page 21) of these Recommendations. This specification must be met without the use of booth or blimp on the lamphouse.

NOISE LEVEL (Auxiliary):

It has been suggested that acoustic treatment of the lamphouse might prove effective in meeting the above basic Noise Level Recommenda-(6)

STRIKER MEANS (Basic)

The lamphouse shall be provided with a striker, hand or motor, which produces no detrimental magnetic effects on the burning of the arc and which will not shatter the crater.

VIEWING PORTS (Basic)

Large adequate viewing ports shall be provided in both sides of the lamphouse, located at the most advantageous position.

LAMPHOUSE DOORS (Basic)

The lamphouse door shall open upward rather than outward (forward or backward) and shall be provided with a positive holding device when open. (It has been suggested that the lamphouse doors be of the type which fold or collapse into a smaller unit when opened.)

CONTROL AND METER PANEL (Basic)

Controls and meters shall be centrally located at one position on the operating side (the right side facing the screen) for ease of operation of the equipment (except for special purposes).

OPERATING POSITION (Accessory):

The lamphouse should be adaptable to opera-tion from either the right or the left side for special purposes.

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SPEED OF MIRROR (Basic)

ble of filling F2.0 and F1.6 projection lenses shall be provided. (Present mirror reflectors

LINING UP METHOD (Basic)

A small port shall be included in the rear housing of the lamphouse in line with the optical center of the equipment so that, with no carbon in the mechanism, preliminary lining up may be accomplished by sighting through the carbon jaws and

INTERCHANGEABILITY OF BURNER ELE-MENTS (Basie)

The burner elements, both the positive and negative, shall be easily removable from the lamphouse in order to replace parts and to facilitate cleaning, and shall be interchangeable between lamphouses of the same

ASH TRAYS (Accessory):

Removable trays in the bottom of the lamphouse should be provided to catch debris and to facilitate keeping the lamphouse clean.

VENTILATION FOR MAXIMUM DEGREE TILT (Basic)

The design of the ventilating system shall be such that the ventilation will not be reduced when using the lamp at a maximum angle of tilt of 30° above or below the horizon. (In the opinion of the committee, a 30° angle is the maximum tilt at which it will be necessary to burn the lamp. This angle is greater than the minimum degree of tilt specified on page 2 for the projector, but may at times be reached in operation due to the equipment as a whole being purposely set off-level in some particular setup.) **HEAT INSULATION (Basic)**

The walls of both type lamphouses shall be so designed and treated that the heat will be conducted through the chimney rather than radiated out through the side of the lamp, thus lowering the temperature of the lamphouse.

HEAT INSULATION (Auxiliary):

It has been suggested, that should the lamphouse not be used with a portable equipment, that a metal cover be provided over the upper part of the lamphouse with sufficient clearance to set up a draft between this cover and the lamphouse to carry the heat transmitted through the lamphouse up the chimney.

MATERIALS OF CONSTRUCTION (Basic) All parts of the lamphouse and shield (baffles) shall be constructed to distribute the magnetic flux in a manner that will not disturb the proper burning of the arc.

VISUAL INDICATOR DEVICES (Basic)

An indicator shall be provided comprising a compact, rigid optical system having a visnal target index to show the burning relation between the carbons. An indicator shall also be provided to show the length of trim left in the lamp.

METERING FACILITIES (Basic)

An accurately calibrated and dependable ammeter and voltmeter shall be provided in the electrical circuit to show the arc current and voltage.

Recommendations Applying Only To the Mirror Type Lamphouse

CAPACITY (Basic)

(8)

The lamphouse shall be designed to be convertible to accept either 11mm or 15mm carbons.

VENTILATION OF THE LAMPHOUSE (Basic)

The ventilation of the lamphouse shall be so designed that the lamphouse will be able to handle as high as 150 amperes without detrimental heating, this to be accomplished with minimum draft at the carbon arc so as not to impair the arc steadiness. (See note, "Flicker," page 4.)

Interchangeable mirrors with speeds eapa-

do not produce adequate results in an F2.0 or F1.6 system and efforts to improve this condition should be made.)

ADJUSTMENTS (Basic)

The mirror shall be provided with universal adjustments so constructed as to maintain their settings.

DISTRIBUTION OF LIGHT ON THE SCREEN (Basic)

An optical system should be developed to provide a more uniform distribution of light on the screen than is now obtained from mirror type lamps. (See "Capacity of the Feeding Mechanism," page 9.)

Recommendations Applying Only To the Condenser Type Lamphouse

CAPACITY (Basic)

The lamphouse shall be designed and constructed to accommodate 13.6, 16, and 18 mm carbons and to accommodate in the case of the relay setup, condensers (see page 13) capable of filling an F1.6 lens and cover the camera apertures as specified under "The Film Gate and Projector Head," page

ADAPTABILITY (Basic)

The condenser lamphouse shall be so designed that it will be adaptable to a relay condenser system at such time as this system may be desirable.

ADAPTABILITY (Auxiliary):

In the opinion of the committee, the basic recommendation on "Adaptability" (bottom of Page 8) will probably call for greater latitude in positioning and adjusting of condensers, and it has been suggested that the front end of the lamphouse be so constructed that will be adjustable to accept different types of optical systems as well as those existing at present and those expected to be developed in the future. One method suggested has been the use of an adapter plate or series of rings on the front of the lamphouse which will allow, at the present time, a stepping down of the size of the openings in the front of the lamphouse to present systems, and the addition of faster systems, at a later date, merely by removing the adapter plates or rings.

VENTILATION OF THE LAMPHOUSE (Basic)

The lamphouse shall be so designed that sufficient ventilation will be provided for the use of currents as high as 250 amperes without detrimental heating, this to be accomplished with minimum draft at the carbon are so as not to impair the are steadiness. (See note, "Flicker," page 4.) ' page 4.)

Feeding Mechanism and Accessories (Applying to Both Type Lamphouses)

CAPACITY OF, AND TOLERANCES IN, LIGHT VARIATION FROM THE FEED-ING MECHANISM (Basic)

The carbon feeding mechanism shall be designed so that the light projected on the screen is not subject to periodic changes of level attributable to the feeding mechanism (see "Light Variation," page 4), and must be capable of handling the carbon sizes specified under "Capacity," page 8.

TOLERANCES (Basic)

Feed and contact brushes for the positive carbon shall be so designed and made that the crater, during operation, will not change its focal position by more than ± 0.025 ". The positive head shall be designed so that the positive carbon axis at the crater will rotate within a circle of a radius of 0.010". BURNING POSITION OF CARBON (Basic)

The feeding mechanism shall be so designed that the negative carbon will burn at an angle, in relation to the axis of the positive carbon, to obtain optimum efficiency. With present equipment and carbons this angle is approximately 53°.

To Be Continued in the April issue

TRADEWINDS

News of New Products: Eastman's new Kodaslide Projector setup for slides and transparencies; Art Reeves making strides to improve glow-lamp quality; improved photographic papers from Agfa; new General Electric lamps.

Kodaslide Projector

A NEW compact modestly priced projector for 2x2 slides, suited for showing either Kodachrome transparencies or black-and-white positives, is announced by Eastman Kodak Company. The Kodaslide Projector, Model 2, achieves minimum bulk compatible with high-efficiency performance of its illumination and optical system.

The base of the Model 2 Projector measures 4x6% inches, and height of the lamp housing is only 5¼ inches. Base, turret head and housing are of die-cast aluminum with glossy, jet-black finish, contrasting with bright, natural aluminum turned finish of the 5-inch lens tube. The optical system consists of a spherical glass reflector; a 100-watt, line voltage, candelabra bayonet base, 4cc filament lamp; three condensing lenses, and a 5-inch f.3.7 projection lens. A special heatabsorbing glass prevents overheating of the slide during projection.

Price of the Kodaslide Projector, Model 2, with 5-inch f.3.7 lens, is \$33.50, including lamp. With the 7½-inch projection lens, the projector is priced at \$52.

Improved Glow Lamps

WITH INCREASING interest being shown by sound engineers in glow-lamp recording methods, Art Reeves, who has pioneered in large scale manufacture of accurately controlled long-life glow-lamps, is completing engineering to offer his modern type lamps to the trade on a mass-production scale at reasonable prices. Interested technicians should visit the Reeves Hollywood plant and they will be surprised at the amount of research and engineering application that has gone into the lamp department. Watch for an early technical article in International Photographer on the modern improved glow-lamp as manufactured by the Reeves organization, along with notes on the new technique of using this system for recording.

Remerscheid Promoted

H. W. Remerschied, long known to studio executives and technicians for the cooperative assistance always on tap from the Bell & Howell western headquarters in Hollywood under his management, last month was promoted to vice-president of the B & H organization in charge of the western district. The announcement was made during the annual visit here of H. J. McNabb, B&H president. Remerschied has been with the Bell & Howell or-ganization for 18 years and has long been active in furthering the cooperation between manufacturers and the studios that has been so greatly exemplified in the pioneer work of the B & H organization in precision engineering of equipment from cameras to laboratory devices. During the past 10 years he has held executive positions at the company's western head-quarters in Hollywood. McNabb's trip here in which he discussed manufacturing cooperation with a number of top studio executives, is expected to result in early important announcements from B. & H.

Agfa Cykon, Cykora Papers

Two New photographic papers from Agfa Ansco are Cykon for contact prints and Cykora for projection prints. The emulsions of the new papers incorporate an improved, full-scale range of tones that results in greater beauty and better accuracy of tone reproduction in the final print.

A wide developing latitude may be obtained in standard formulas with usual processing technique. The new papers are now being stocked by photographic dealers in all standard sizes; Cykon at the regular prices listed for Agfa Convira Paper (Double Weight) and Cykora at the

same prices listed for Agfa Brovira Paper (Double Weight).

Four New G-E Lamps

Two New photoflash lamps—a foil-filled "Synchro Press No. 11" and a wire-filled "Synchro Press No. 16," each designed primarily for news photography, were announced last month by GE's incandescent lamp department at Nela Park. Cleveland. Also announced was development of a greatly improved No. 7 wire-filled photoflash lamp, designed for news camera men and others. All three lamps will be made avaliable March 1.

Also, a new self-reflecting photoflood lamp—designed to simplify taking of better motion pictures, snapshots, and time exposures by professional and amateur photographs—was announced.

The compact bell-shaped unit, consuming 500 watts, is called GE Mazda Reflector Photoflood Lamp No. R2. It is equipped with the conventional medium-screw base and may be used on ordinary lighting circuits (105-120 volts).

For the purpose of distributing evenly the high amounts of reflected light, the circular end of Photoflood R2's all-glass bulb is inside frosted. Despite the new lamp's compact size—maximum all-over length, 6½ inches; greatest width, 5 inches—it produces smooth illumination over a spread of approximately sixty degrees. Color quality of the light is similar to that of the standard 500-watt Photoflood No. 2.

Garfield by Hurrell

The April issue of International Photographer will feature another striking personality portfolio from the camera of George Hurrell, contributing editor, and ace portrait photographer of Warners' stars. There will be eight strikingly effective and typically Hurrell shots of John Garfield, the studio's recent star discovery.







Left: Eastman's new Kodaslide Projector, Model 2, very compact with slide carrier for 2x2 glass slides and new type Kodaslide Ready-Mounts for miniature camera transparencies. Center: GE's new Reflector Photo-floodlamp, No. R2, note inside frosting. Right: From left to right, three new GE press photography bulbs, No. 7, No. 16 and No. 17 Synchro Press flash lamps.

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Last month the following patents of inerest to readers of International Pho-OGRAPHER were issued by the U. S. Patnt Office. These selections and brief decriptions of new patents were prepared v Robert W. Fulwider, well-known Los ingeles attorney, specializing in patent nd trade mark counsel.

No. 2,142,183—Method of Simultaneously Pro-DUCING TWO OR MORE TOTALLY DIFFERENT PIC-TURES FROM ONE FILM STRIP. Vinent C. de Ybarrondo, assignor to Patco, Inc., Los Angeles, Calif. Application Jan. 20, 1936. 3

method of producing two or more different ictures from one film strip which consists of Iternately projecting pictures directly to one creen, and by reflection to a second screen.
To. 2,142,413—Photographic Exposure Tester.

Arthur E. Reeves, Los Angeles, Calif. Application May 1, 1937. 3 Claims.
pendulum actuated switch to alternately open

nd close the switch during the pendulum's

wing.
No. 2,142,493—Motion Picture Apparatus. Arthur W. Carpenter, assignor to United Research Corp., Burbank, Calif. Application April 20, 1936. 6 Claims.

film guiding means comprising a plurality of oaxial spaced discs with a film guiding memer extending between the discs to lead the film

o a second pair of coaxial spaced discs, No. 2,142,538—FILM TREATING APPARATUS. Albert W. Tondreau, assignor to Warner Bros. Pictures, Inc. Application Oct. 28, 1936. 2 Claims. In apparatus for cleaning film by passing it hrough a solution and over a drum revolving n the direction of the film motion but at a

lower speed.
No. 2,143,145—Projection Means. Philo T.
Farnsworth, assignor to Farnsworth Television Incorporated, San Francisco, Calif. Original application Nov. 6, 1934. Divided and this application July 1, 1935. 5 Claims.

I motion picture projector in which the film emains stationary for a time and then moves on while a rotating prism holds the image sta-

ionary on the screen.

No. 2,143,303—Screen for Cinematographic Projections. Leopold Darimont, Anderlecht-Brussels, Belgium. Application Feb. 18, 1937. In Belgium Jan. 6, 1937. 8 Claims.

A projection screen made up of several groups of sheets, each group having two sheets of transparent material with one reticulated sheet be-

Vo. 2,143,500—METHOD OF GAUGING PHOTO-GRAPHIC EXPOSURES. Philip Charles Smethurst, and Stanley Sydney Francis, Sheffield, Eng. Application Jan. 7, 1937. In Great Britain June 15, 1936. 1 Claim.

An exposure meter which takes into consideraion the brightest portions of a scene to be aken, and which makes use of a translucent

creen to measure the brightest portions.

Vo. 2,143,762—Photographic Color Process

AND FILM THEREFOR, John G. Capstaff, assignor to Eastman Kodak Co. Application Oct. 28, 1936. 8 Claims.

A lenticular film having three differently sensiized emulsions on the side of the film opposite rom the lenticulations.

No. 2,143,769—CLOSURE MEANS FOR A FILM MAGAZINE AND ARRANGEMENT FOR OPERATING THE SAME. Henry N. Fairbanks, assignor to Eastman Kodak Co. Application May 16, 1936. 11 Claims.

A closure means for a film magazine which is operated by a pin engaging the magazines when





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the latter is placed in position in the camera.

No. 2,143,786—Photographic Screening Dye. Leopold D. Mannes, Leopold Godowsky, Jr., and Burt H. Carroll, Rochester, N. Y., assignors to Eastman Kodak Co. Application March

15, 1935. 13 Claims.

A photographic element including an emulsion layer sensitive to blue light and in contact therewith a screening layer comprising a transparent material containing a nuclear hydroxy derivative of an aromatic azo compound uniforml dispersed therethrough, and a sensitive emulsion layer containing a cyanine dye adjacent to th screening layer.

No. 2,143,787—Sound Track for Multilaye FILM. Leopold D. Mannes and Leopold Godou sky, Jr., assignors to Eastman Kodak Co. AI plication Dec. 11, 1936. 2 Calims.

A method of forming a sound track on a mult layer film which consists converting only th sound track to silver sulfide, and coloring th film in a series of steps which does not affect the silver sulfide sound image.

No. 2,143,791—Photographic Stripping Film Gale F. Nadeau, assignor to Eastman Koda Co. Application May 16, 1936. 9 Claims. A stripping film having a temporary suppor carrying a cellulose ester permanent suppor

which carries the emulsion.

No. 2,143,810—FILM HANDLING MACHINE. Henr E. Van Derhoef, assignor to Eastman Koda Co. Application Nov. 19, 1937. 14 Claims. A machine for treating a strip of sheet material which has a drum supporting the strip a its edges and means for applying a fluid to support the film between its edges.

No. 2,143,813—Focusing Lens Mount. Donald L. Wood, assignor to Eastman Kodak Co. Application March 15, 1938. 5 Claims.

A focusing mount for lens which has fixed lens elements and a movable focusing element.

No. 2,144,088—FILM FEED APPARATUS. Albert B Scott, assignor to S. C. K. Corp., Los Angeles, Calif. Application April 9, 1937. 2 Claims A film feed apparatus in which an idler roller around which the film passes, is intermittently forced downward by a cam.

No. 2,144,209—MOTION PICTURE PROJECTOR. Emil Vollenweider, Sacramento, Calif. Application March 15, 1937. 8 claims.

A motion picture projector for use with various width films, with a gate for wider film located behind a gate for narrower film.

No. 2,144,210—Sprocket Film Feed for Motion PICTURE PROJECTORS. Emil Vollenweider, Sacramento, Calif. Original application, March 5. 1937. Divided and this application Sept. 28 1937. 3 claims.

A sprocket for a motion picture projector for various width films in which the sprocket con sists of a pair of concentric sprocket sections the outer section being the one of less diameter. No. 2,144,211—Selective Drive for Projector

REELS. *Emil* Vollenweider, Sacramento, Calif Application March 18, 1938. 14 Claims. A film reel drive mechanism in which either or both the reels may be driven by a spindle.

No. 2,144,258—FILM TENSIONING DEVICE. Wilbur M. Flaherty, Fort Dodge, Iowa. Application Nov. 16, 1936. 7 Claims.

A film tensioning device having a pair of shoes which bear on opposite faces of the film.

No. 2,144,363—System for the Distribution of Electrical Energy. *Donald W. Coote*, Baldwin, N. Y., assignor to Trans-Lux Corp., a corporation of Delaware. Application Feb. 6, 1935. 4 Claims.

A system of connecting the arc lights of individual motoin picture projectors to rectifiers. No. 2,144,457—Process of Producing Color Films by the Subtractive Three-color Methop. Ludwig Horst, Berlin-Halensee, Germany. Application April 4, 1938. In Great Britain Sept. 16, 1936. 3 Claims.

A method of making three-color positive films which includes printing two of the separation negatives on opposite faces of a positive film and coloring them, and then treating the film with a bichromated colloid and printing the third negative on the latter.

No. 2,144,622—MAGAZINE FOR MOTION PICTURE CAMERAS. Adolph M. Frost, Arverne, N. Y., assignor of 90% to Ernest Stern, Astoria, N. Y. Application July 27, 1936. 3 Claims.

A brake for film in a film magazine consisting of projections in the walls of the path of the film so that the film does not move except when urged by the propelling mechanism.

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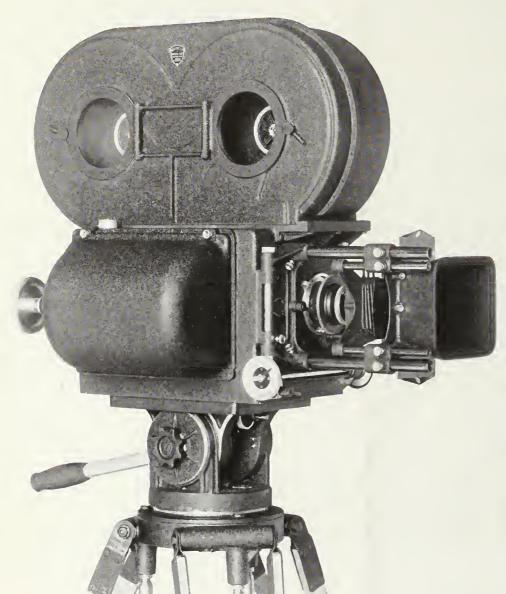
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Vol. 11

April, 1939

No. 3

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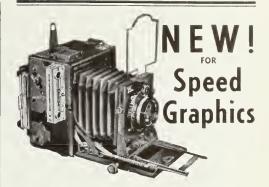
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CLOSE-UPS

Guy Bennett: Operative Cameraman

Every time a sound motion picture scene is "taken" there are two men who must give their O.K., for they are the only ones who actually see and lear the scene as it will appear when projected in the theater. The man who sees it is the operative cameraman. The man who hears it is the sound aixer. Looking through the camera view-finder, the operative cameraman is he final observer of the enactment of the action, composition, dramatic, ighting and other effects that have been devised by scenarist, director, layers and director of photography. He and the soundman must decide rom their own personal sensory observation through view-finder and head hones whether or not a satisfactory compromise with all creative factors as been realized.

Typical of the several hundred operative cameramen members of Local 659 is Guy Bennett, familiar to everyone on the Paramount lot, who is seen in action on the set in accompanying shots by G. E. Richardson, stillman member of Local 659. Alertness, long experience and thorough knowledge and understanding of the aims of director and director of photography are among the qualities that make these men so valuable. They must be ever on the watch that no unexpected or unplanned action by the players or background changes from the originally planned movement and lighting of the set, occur during shooting. They sit behind the camera, like the engineer at his throttle, ever watching for danger signals.

Typical also of the average operative cameraman is Bennett's record. Like many another he virtually grew up with the business. Born in Tombstone, Arizona, he came to California as a youngster, went to high school, in Glendale, spent several years at Stanford University and found an entering wedge into the picture industry through the laboratory. His first job was at the old Standard lab, since absorbed by Consolidated, thence to the loading room at Paramount. By gradual progress, working in that studio's camera department, since 1924, reached his present classification.

During production the average scene runs 50 to 60 feet in length as photographed, which of course is trimmed considerably in the final cutting. After placement of camera and lighting and two to seven rehearsals, the scene is generally photographed two to three times, sometimes more. During all this activity, the operative cameraman must familiarize himself with the composite aims and wishes of director and first cameraman, and see that

On the Cover

Fred Astaire and Ginger Rogers in their roles as Vernon and Irene Castle from their latest RKO-Radio picture, photographed by John Miehle, stillman member of Local 659, IATSE. Turn to Pages 14-15 for layout of shots by Miehle of the stars in dance sequences from the picture.

it is recorded on the film.

Bennett is an enthusiast for the use of the view-finder to determine camera setups in advance. He is shown on Page 5 at left using the view-finder detached from the camera, and at left behind the view-finder during actual shooting. This practice is used by about 50 percent of the directors in the industry and Bennett believes it saves 10 to 15 minutes on each setup by showing the director any possible "bugs" in a contemplated setup and thus avoiding waste motion by the camera and electrical crews.

He also favors the use of the photronic light meter, another practice on which the industry is about 50-50 divided. At Paramount, studio executives favor keeping camera crews together as a unit. Bennett usually works with Ted Sparkuhl, director of photography, and Lathrop Worth, assistant cameraman. Both Bennett and Sparkuhl carry Weston meters, which are regularly checked

to insure efficient operation.

Recent productions on which this crew has worked were "If I Were King" and "Wells Fargo," directed by Frank Lloyd, "St. Louis Blues," directed by Raoul Walsh, and "The Gambler and the Lady," directed by Alexander Hall. While Bennett is emphatic in his views on use of the view-finder in lining up scenes in advance and the electric meter to determine proper exposure and lighting values, he refuses to take sides in the old and endless debate over action vs. composition. He believes each important, with emphasis on one or the other dependent upon the particular scene.

The operative cameraman's duty is to strike a balance in his actual photography between the box-office and dramatic flair of the director and the artisite demands of the director of photography. In this Bennett is typical of the run of able operative cameraman. They're competent assured technicians but also good diplomats. They have to be, since under their cool and watchful eye flows the final result of a lot of conflicting temperaments and creative inspiration.—*Gib*.

soft focus

By GEORGE SCHEIBE

Soft-focus or diffusion is the most popular of all photography with professionals. Hardly a single scene is photographed today—either in the studio or on location—without the use of a Diffusing Screen. In fully half of these scenes, the diffusion is so delicate that it is noticeable only to the trained technician; yet it is the presence of this all-but-imperceptible diffusion which is responsible for the charm, naturalness, and "quality" of modern studio cinematography.

Our lens makers have so perfected their lenses that even the fastest objectives now in use render an object with a greater degree of sharpness and detail than the human eye ever perceives in nature. Thus, the pictures made with these lenses are frequently jarring to our optic sensibilities; we see details—imperfections—the texture of skin and make-up, and so on, which detract from our enjoyment of the picture and its message. Diffusing Screens have been devised to delicately soften the image cast by th lens, obscuring these defects, and giving a satisfyingly natural picture without sacrifice of any of the essential characteristics of the lens—its peed, correction, and general quality.

In studio practice, these screens smooth out facial wrinkles, banish the flaws in makeup, and make the picture generally more pleasing. These Diffusing Screens are made in a number of grades, giving diffused effects ranging from the very slightest to the heaviest permissible softness. The basis numbers of the series—No. 1/256 and 1/128 give a very sight degree of diffusion, very pleasing to the eye. 1/64 and 1/32 give a moderate and pleasing effect, while the 1/16 and 1/8 go into heavier diffusion. The heavier ones—1/4 1/2 and 1 give effects that are pleasing but very heavy diffusion. Nos. 2 and 3 are used for extreme effects.

Many famous cinematographers use the lighter screens for all scenes, applying heavier one for close-ups—and never working without a Diffusing Screen. Users of 16 mm will find the lighter gradations extremely beneficial to their camerawork. Users of Leica, Contax and other miniature cameras will find these Diffusing Screens very useful too, in making their enlargements. Several users have told me that the use of No. 1/64 on the lens of the enlarger when making big bromides tends to minimize the grain-effect so injurious to their work.



Comparison between unfiltered shot and No. 1/16 Schiebe soft focus filter.



Illustrative of location settings for 20th-Fox "Stanley and Livingstone" in Africa are these.

"DR. Livingstone, I Presume"

Nodern location jaunt to Africa insures authentic backgrounds for 20th-Fox acture based on Stanley's famous search for long lost Livingstone.

By SOL HALPRIN

IIS WAS THE most thrilling mob scene I had er filmed!

Some 3,000 painted African savages, brandishing ears, came swarming down a hill, racing saight toward the camera, which we had mounter on a small platform. They were yelling and cieking their war cries of years ago and they loked like the kind of devils who inhabit the yest of African nightmares.

As they passed the camera, some of them rled their spears at us. I could hear them nistling by me and saw them missing Director to Brower and Sid Wagner, my fellow cinemagrapher, only by inches. I turned as white and ff as an alabaster statue.

The natives, of course, were only gagging, but ne of us could quite appreciate their macabre nse of humor. They were trying to scare us, d succeeding quite admirably.

They were the Masai, fierce warriors until the itish calmed them down a few years ago. We d traveled for 40 days out of Nairohi in Tannyika to reach their country-40 days of rain d mud, and hyenas howling outside our tents night and lions roaring a hundred yards away. Our party numbered 27, besides the 300 safari ys, and we comprised an expedition that 20th entury-Fox had sent out to shoot 100,000 feet of ckground material for "Stanley and Livinga two million dollar picture that was to Il the story of the epic search in 1871 by enry M. Stanley, the New York newspaper reorter, for Dr. David Livingstone, a missionary d explorer who had been missing since 1866. Working from Stanley's own diaries and recds, we were retracing mile by mile the hazardis route he had taken before he found Living-one in the village of Ujiji, 1,300 miles from the ast. But where Stanley had traveled on foot, e were riding in a fleet of 27 trucks. As we enetrated the plains and jungles, we were forced build our own roads and bridges and often ere delayed for days at a time by such enginring feats. It took Stanley 10 months to reach jiji from the island of Zanzibar. We made the ip and the return in five. Equipped with two Mitchell cameras and an

Equipped with two Mitchell cameras and an kley, we were more interested in obtaining enes of native battles, grass fires and other pectacular events that periled Stanley, than in aged wild animal scenes. We took our hippos, ons, cheetahs and other plain and jungle beasts we encountered them, hoping to get a true cture of African animal life rather than a suc-

ession of concocted thrills.

The sunlight proved so similar to California aylight that we could work almost without tests, though we carried a test truck where we deloped samples each day to make certain everying was all right with our equipment. By deydrating the film after each sequence and sealing it in cans, to be shipped back to Hollywood, e avoided the fogginess that had beset other exeditions into hot lands.

The farther we traveled from Nairobi, the more ar troubles multiplied. Heavy rains fell day fter day for the first month, bogging us down in 1e Masai country, and after the rains the grass tot up to a man's chest, providing excellent amushes for wild animals. The worst followed, 10 to the property of the property of the grass, burn the Tanganyika plains clear. For days and nights, the conflagration raged as far as a could see. It was just the kind of a spectacle 11 to the grass, and nights, the conflagration raged as far as a could see. It was just the kind of a spectacle 11 to the grass, and nights, the conflagration raged as far as a could see. It was just the kind of a spectacle 12 to the grass of the grass

had almost been trapped at one time by such blazes, and we unrolled thousands of feet of film.

The fire, of course, was dangerous. We laid fire breaks at night around our trucks and in the day time sent natives far ahead to spot blazes that might be roaring toward us. On three occasions we circumvented the flames just in the nick of time.

The fires naturally swept right through Masai villages and burned the huts, but the men didn't care. The women, who are the beasts of burden

in that country, would re-build them.

The Masai were suspicious of us at first, but when they learned that we would pay them in copper wire, sugar and meat, as well as in shillings, they were willing to become movie extras. The shillings, of course, were merely ornaments to them which they strung about their necks, as they did the copper wire, which the women prize more highly than anything else.

Sugar and meat meant more to them. They were starved for sweets and we rationed every "extra" one cup a day. They were hungry, too, for meat. Although the men own cattle, which is the principal medium of exchange between the tribes, they loard them until they get enough to pay for a wife. Ten cows or 90 goats will

buy a girl.

For our big mob scenes, which were to picture the tribesmen attacking Stanley and his fever. ridden safari, we rounded up Masai from 100 miles around. They came in their ceremonial garb, and we hid them behind a hill. Brower told them that when we were ready, he would fire a gun. Like children, they were too anxious to perform for the great white men and they came pouring down the hill before we were set up. It took us five hours to get them hidden again and then the sun went under. We were waiting for the cloud to pass when once again they piled down on us. That farce continued for two days, but eventually we got a mob scene for "Stanley and Livingstone" which should give moviegoers a thrill. Our white hunters told us that never before in Africa had so many natives been rounded up for a film scene.

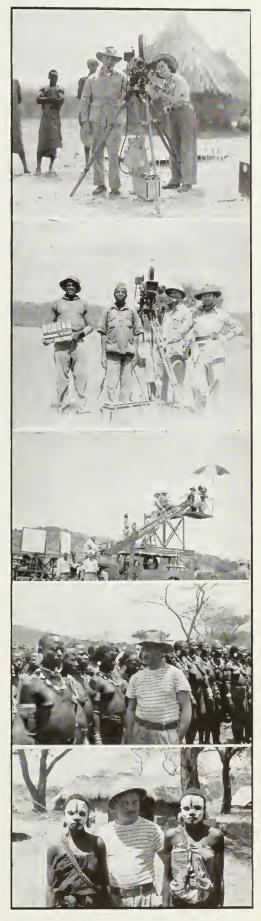
The tribesmen naturally had no idea what we were doing. They knew nothing about movies and consequently thought that we were slightly balmy, especially when we insisted on them doing the same thing over and over so that we could get our shots from all angles. We gave our orders to interpreters, who passed them on in swahili and eventually they were translated by other interpreters into the native tongues. Goodhearted fellows that they were, our interpreters often changed our instructions so that the tribesmen wouldn't realize just how crazy we were. Eventually we had to pantomine everything we wanted done. If we wanted them to come by the camera dancing, Brower would start dancing with them and lead them by our camera setum.

and lead them by our camera set-up.

At Ujiji we found some natives who were so mechanically gifted that they could help us build

a dolly and a camera crane out of wood. We got the first camera and dolly shots ever taken in the African jungles.

Twentieth Century-Fox will use about 5,000 feet of what we filmed in Africa. Another 5,000 feet of interior scenes, with Spencer Tracy as Stanley and Sir Cedric Hardwicke as Livingstone are being filmed for "Stanley and Livingstone" in Hollywood with Henry King, who recently created "Jesse James," as the director. The cast also includes Nancy Kelly, Richard Greene and Walter Brennan.



shots. Note wooden camera crane built by natives, which with other scenes illustrated is described in accompanying story by Sol Halprin, member of Local 659, IATSE. Otto Brower and Mrs. Osa Johnson were in charge of the unit.



George Hurrell unveils striking series of character studies of John Garfield, Warners' dynamic new star discovery 8



ERNATIONAL PHOTOGRAPHER for April, 1939

fundamental photographic physics

Sécond Installment of reference material on photographic physics in convenient and handy form for filing, from Chapter II of new volume, "Basic Photography," by Don Hooper; to be concluded in May International Photographe

This is the second installment of International Photographer's republication of Chapter II on Fundamental Photographic Physics from Don Hooper's new book, "Basic Photography." The author makes no claims that this is all new or original, but International Photographer has received much comment since publication of the first installment last month on the intensive research and compilation engaged in to produce his reference-worthy tome. The numerals in parentheses in the following text refer to the page numbers on which the material appears in the original edition of "Basic Photography."—Ed. (19)

The device used for varying the size of the opening through which light rays are admitted through the lens is called the DIAPHRAGM. It consists of a number of thin metal or composition sheets, so arranged that the size of the opening they surround, can be varied at the will of the operator. This opening is approximately circular, concentric with, and normal to, the axis of the lens. (The axis of the lens is an imaginary straight line through its center, at right angles, perpendicular, or normal to the surface of the lens at the center.) In doublets, the diaphragm is always between the cells, its position being optically chosen for that particular lens combination. The diaphragm is often referred to as the lens "stop," and the act of reducing the size of its aperture as "stopping down." The relative size of the largest opening fixes the maximum working speed of the lens, and the better the optical correction, the larger this may be. When the diaphragm is at its largest opening, it is said to be at its widest aperture, or, the lens is "wide open."

SPEED OF A LENS

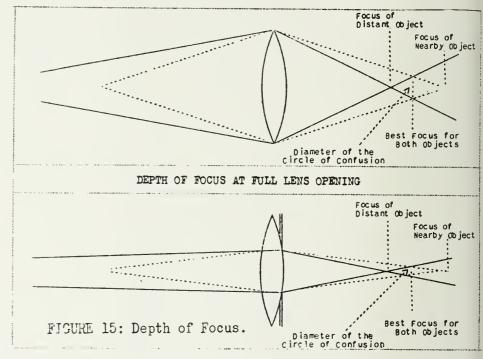
It is obvious that the larger the effective aperture of a lens, or the size of the diphragm opening, the greater will be the amount of light admitted to the sensitive material, in a given length Therefore, the exposure required to produce the latent image with any given amount of light, will be shortest when the lens is wide open and will increase in duration in proportion to the amount the lens is stopped down. Also, since the light rays, after passing through the lens, spread out in the shape of a cone with its base at the focal plane, their intensity decreases as they get farther away from the lens. with the same size diaphragm opening, the intensity of light on the focal lane decreases as its distance from the lens is increased. ming up the above, the SPEED OF A LENS is determined by two factors the size of the effective aperture, and the focal length of that

THE F SYSTEM OF DIAPHRAGM STOPS

The speed of a lens, as was just stated, depends upon the diameter of the effective aperture and its focal length. It is expressed according to what is known as the f. system, which is nothing more than the ratio between the focal length and the effective aperture. For example, if the effective aperture of a lens is one inch, and its focal length, eight inches, the f. value would be 8, or in the term commonly used, the lens would be working at f.8. From simple arithmetic we know that the area of a circle varies as the square of its diameter. In photographic terms this means that if the diameter of the diaphragm opening is reduced by one-half, one-quarter of the previous amount of light will be admitted and four times the previous exposure will be required.

Now, by halving the diameter of the dia-

By DON HOOPER



Circle of Confusion - 0.1 mm, or 1/254 in.

FOCAL			RELATIVE	APERTURE		LOMB OPTICAL	
LENGTH	f.4.5	f.6.3	f.8.0	f.11.0	f.16.0	f.22.0	f.32.0
4 in. 56 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24	74 ft. 116 167 227 296 375 463 560 667 782 907 1042 1185 1338 1500 1671 1852 2042 2241 2449 2667	83 119 162 212 265 331 400 476 559 648 744 847 956 1071 1194 1458 1600 1749 1904	42 ft. 65 93 127 167 211 260 315 375 440 516 585 7753 844 940 1040 1148 1260 1378 1500	47 68 93 121 153 229 273 320 371 426 485 547 614 684 756 835 916 1002 1092	21 ft 32 47 64 83 105 130 158 220 255 293 334 377 422 470 520 574 639 750	15 ft. 24 34 47 61 77 95 115 137 160 186 213 243 274 307 342 378 418 458 501 546	10 ft. 16 23 32 42 53 65 79 94 110 128 147 167 189 211 235 260 287 315 345
		Figur	e 16: Hyper	rfocal Distan	ce.		

phragm opening, we have increased the ratio between the focal length and the aperture, or the f. value has been increased. In the example givn above, if the effective aperture of the eightinch focal length lens is decreased from one inch to one-half inch, the f. value will be increased from 8 to 16. The diameter of the diaphragm on most lenses is controlled by a ring on the barrel, which has an index mark on it. This mark can be placed opposite any of a series of numbers corresponding to the f. value

for the different diaphragm openings of that particular lens. It will be noted that, as the numbers increase in value, the size of the opening decreases. With the usual exception of the lowest number, which gives the f. value for the maximum effective aperture, these numbers are so chosen that as the index pointer is moved on to the next larger number the amount of light admitted through the diaphragh is decreased by half. These numbers in some cases (20)

e not exact in this ratio, but are sufficiently ose approximations. The following tables show the relation between f. values, amount of light, nd exposure required.

Number 1 is based on a correct exposure of ne second at f.8. They both show the amount of ght admitted, and the exposures required for different f. values commonly used.

ic ann	ciciii i. varaco	commonly decar	
	f. value	Amount of light	Exposure
, value	squared	admitted	seconds
1.5	2.25	32	1/32
2.0	4.	16	1/16
2.8	7.8	8	1/8
4.0	16.	4	1/4
5.6	31.36	2	1/2
8.0	64.	1	1
11.3	127.69	1/2	2
16.0	256.	1/4	4
22.6	510.76	1/8	8
32.0	1024.	1/16	16
02.0	1021,	-/ -0	

Number 2 is based on a correct exposure of

ne second	at 1.9.		
	f. value	Amount of light	Exposure
. value	squared	admitted	seconds
1.9	3.6	32	1/32
2.5	6.25	16	1/16
3.5	12.25	8	1/8
4.5	20.25	4	1/4
6.3	39.69	2	1/2
9.0	81.	1	1
12.5	226.25	1/2	2
18.0	324.	1/4	4
25.0	625.	1/8	8
		,	

It will be noted from a study of this table that he amount of light admitted is inversely proporonal to the square of the f. value, while the exosure required is directly proportional to the quare of the f. value. It will also be noted that or each larger f. value, the exposure required is

oubled.

It is a fact not generally taken into cognizance, ut these diaphragm markings are only true when he lens is focused on infinity. As the lens is acked forward to focus on nearby objects, the atio between the focal length (distance from he lens to the film) and the diaphragm openng is increased, until it may be many times the eading on the lens barrel. When photographing n image, the same size as the object, the lens s two focal lengths from the film, and the t. alue of the lens is double what it was at infinity. 7.8 has thus become f.16, and the size of the liaphragm has not been changed at all in the ens. An exposure which was correct in the first ase will be only one-fourth enough in the secand case. But regardless of where the lens is ocused, the relation between the markings on he lens barrel will always remain the same. It he exposure is correct for one f. value, it will be correct if multiplied or divided by the factor of any other f. value on the lens. 21)

DEPTH OF FOCUS

When a camera is focused on an object at a ertain distance away, objects closer or farther rom it are more or less blurred, depending upon heir distance from the plane in sharp focus. fheoretically, objects on either side of this plane of sharp focus are blurred, or out of focus, but practically, the distance on either side at which bjects appear sharp is controlled by the tolerince of the eye to the blurring. In other words, we consider objects on either side of the plane of sharp focus, to be also in sufficiently sharp ocus until they become blurred to the unaided eye, or as it can be expressed, until the circle of confusion becomes of appreciable size about 1/200 inch in diameter.

The distance between which objects near and ar are in visually sharp focus is called DEPTH OF FOCUS. Depth of focus is controlled by he following:

1. Lens Aperture or Diaphragm Opening.

Focal Length of Lens Used.

Distances of Object from Lens within Infinity.

A large lens aperture gives less depth of focus

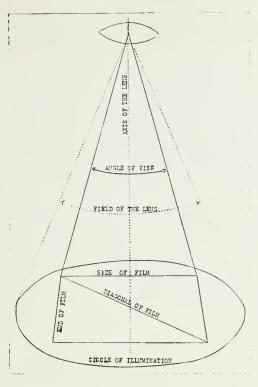


FIGURE 17: Field of a lens, angle of view, and illumination in a plate.

than a small one. Depth of focus, therefore, is increased by stopping down. In Figure 15, the upper drawing shows the focal plane for near and distant objects, the lens being used at its full aperture. It will be noted that the marginar rays intersect at a large angle, rapidly converging and diverging. Therefore, the size of the circle of confusion rapidly increases as we move the focal plane from either intersection, giving little latitude or depth of focus. At the point showing the best focus for both objects, the circle of confusion is large enough to cause appreciable blurring. In the lower drawing, using only the central portion of the lens, it will be noted that the rays intersect at a small angle, giving greater depth of focus. At the same time, it will be noted that the circle of confusion for the best focus is much smaller.

Other conditions being equal, a short focal length lens has a greater depth of focus than one of long focus, also, the greater the distance from the lens to the object focused upon (up to infinity focus) the greater will be the depth of focus.

HYPERFOCAL DISTANCE

When the lens is focused on infinity, there is an allowable variation from true focus which is governed by the size of the circle of confusion. This variation can be considered as a depth of focus, but it occurs in only one direction and that is toward the lens. Hyperfocal distance, then, is controlled by two factors: the focal length of the lens used and the size of the aperture used; i.e., the greater the focal length, the greater the hyperfocal distance; or the smaller the lens aperture, the less the distance, or, vice versa on either of these. Figure 16 gives the hyperfocal distances for lenses of various focal lengths and at various lens stops.

DEFINITION

Definition is that quality in a lens which produces clear, sharp detail. It is obtained by correct design and careful workmanship in the manufacture of the lens and also by using it properly when taking photographs. should not be confused with depth of focus. Whether using the camera for taking pictures or the enlarger for making projection prints, stopping down will not increase the definition of that lens. Stopping down merely extends the plane

of sharpness a greater distance. Most lenses define the sharpest detail at, or near, their largest openings, and there is a gradual loss in definition as the lens is stopped down, even though there is an extension in the plane of sharpness.

FIELD OF A LENS

The field of a lens may be expressed as the diameter of the illuminated circle of light rays falling on the focal plane when it is adjusted for infinity focus. In other words, the circum-ference of this circle marks the limit of light rays passed through the lens and falling on the focal plane. The field of the lens, like its focal length, is fixed and unchanging, and depends upon the lens curvature, and the ratio of the lens diameter to the length of the lens barrel. A lens with abrupt curvatures and short barrel will have a larger field than one with slight curvatures and a short barrel. A long lens barrel gives greater separation between the elements and this tends to cut the diameter of the lens field.

ILLUMINATION OF A PLATE

The strength of light falling on a plate is not uniform, but is strongest at the axis of the lens and decreases toward the margins of the field. This is due to the fact that light rays striking the plate at the lens axis are perpendicular to the surface, while those nearer the margins of the plate strike the surface at an angle from the vertical and must cover a greater area. Again, these marginal rays in traveling a greater distance from the lens are more spread out and each must cover a greater area than those near the axis. This variation in illumination is rarely noticeable in negatives made with narrow or medium angle lenses, but, as the strength of light decreases rapidly for larger angles, this loss in illumination is quite noticeable in negatives made with extreme wide angle lenses. This can be compensated for when using artificial illumination by using an increased amount of light near the edges of the scene, or when making projection orints with the enlarger by dodging or holding back the light around the edges of the print.

(To BE CONTINUED IN MAY)

GRIP EQUIPMENT

Slater lines up valuable array of equipment on Paramount lot.

By GEORGE M. HAINES

TECHNICAL SUPERIORITY and polish of Hollywood pictures generally comes from devotion to the "little things." This is particularly evident in the devices that clever technical workers have evolved for making the photography of scenes from special angles possible in the speediest and most efficient manner. However, ideas developed at one studio may not come to attention of craftsmen on another lot; hence, the idea of the Studio Mechanic's Handbook as a central source of information and as a medium for the exchange of ideas of practical value in production.

Recently we have shown devices and gadgets used at 20th Century Fox. This month we show some special devices used at Paramount. Some studios prefer variations of the devices we have shown or plan to describe in coming issues of INTERNATIONAL PHOTOGRAPHER, but in every case the equipment shown is practical, sturdy and

time-saving.

Before describing the array of Paramount devices illustrated on Page 12, let us again take time out to remind our professional readers that this information is being presented in Interna-TIONAL PHOTOGRAPHER in newsy style, but is eventually intended for publication in handbook form as a practical reference manual. This is a monumental task, as we intend to classify and describe over 5,000 items used in studio work. from lamps and camera equipment to specialized gadgets of every type. We therefore welcome and encourage any suggestions or comment from professional technicians either in the way of additional variations or descriptive data and minimum specification on the devices and equipment now appearing in this series or suggestions as to equipment worth covering in forthcoming installments.

We also would like to announce that as part of the handbook program we are working in cooperation with studio department heads on questionnaires covering the proper technical name, slang names, purpose, handling and minimum specifications of all types of studio equipment. These questionnaires will be in circulation within a short time.

The Paramount equipment illustrated is under the watchful eye of the studio's able grip department chief, Clarence Slater. Topping the left hand column are four handy devices:

(1) 6-ft. portable parallel, a collapsible setup for location and work in close space, which knocks down very compactly for easy transportation:

(2 3-ft. roller parallel, very handy under many circumstances, and easily movable;

(3) Sound flat screen of modern improved design, which is easily moved about;

(4) The "hay-rack" or grip equipment box; these are used at every studio; Paramount's is a typical example of neatness and portability.

The two items at the bottom of the left-hand column are extremely valuable for permitting the camera crew to get rapid setups on flooring that otherwise would require special temporary floors being moved in, since either the surface must not be marred (such as glass, leather, expensive rugs, etc.), or is of concrete, dirt fills, tile, etc., which would make an ordinary tripod or dolly setup difficult.

(5) is the collapsible "banjo," so-called because it looks like a banjo when folded up; while (6) is a variation in the form of tripod paddles; both these devices are adaptable to various extensions of the camera tripod tips.

A more complicated device is shown in (7) with a gimbal tripod mounted on a banjo. This tripod works like a ship's gyroscope and keeps the camera on a steady keel when such is desirable in photographing on a ship's deck, railroad train, camera car. special effects rockers, and in similar circumstances. Note the heavy lead weights, which with the special design of the tripod and banjo equalizes against any movement of the originally set camera level. Shown with the device is Gordon Palmer, foreman in the Paramount grip department, a veteran of 12 years with that studio, who is credited with many innovations in the field of grip equipment.

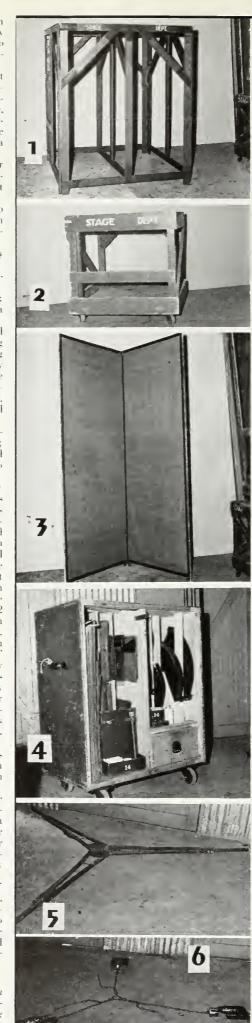
Another interesting combination is shown in (8) and (9). The "New York camera pancake" shown in (8) is very valuable for use in low shots, particularly in dirt for exteriors such as horse race finishes, sports scenes, etc. It is heavy enough to give the camera a solid support. For quick change to a slightly higher angle, a number of different, simply-adjusted metal extensions are used with the pancake, one of which is illustrated in (9).

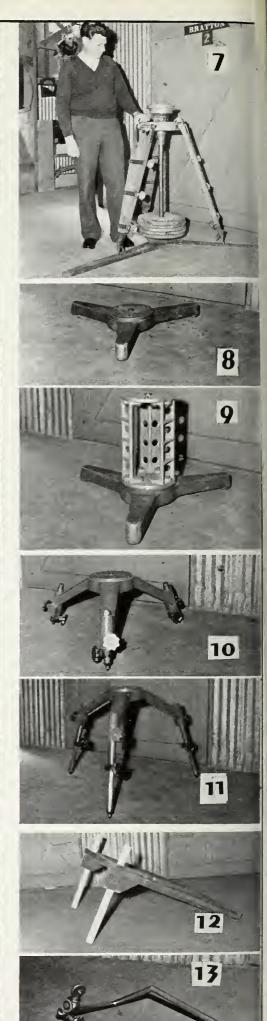
(10) shows another low angle device that is very handy, the "New York camera high hat." In (10) is shown a slightly higher angle, through use of the quickly adjustable legs.

A very handy gadget is the small stair-case platform, shown in (12). This provides an almost immediately available steady base on a stair-case for placing camera, lamps and similar equipment. The open end is placed firmly over a stair tread, and the large white pins are adjusted to level, then the whole setup is quickly nailed into place.

A gadget of many uses is the "lupe bracket" in (13), which can be used on a camera dolly, velocipede, crane or hoom, for special spotlighting, which must be kept in fixed relationship to the camera lens through a moving shot. The long bar is fastened to the dolly or crane, and the spot is adjusted and locked in place by the friction knobs.

Paramount studio grip equipment illustrated on this page is described by number in the accomanying story by George M. Haines, beginning on Page 11.





PROJECTION SYMPOSIUM, PART VI.

atest technical data on theatre projection sound systems features speaker system and general theatre acoustics, escribed in series of articles by outstanding engineers of RCA Manufacturing Co. Inc., Hollywood service staff.

By WATSON JONES

the problem of installing a given speaker sysm in theatres of different design and acoustic operties with the idea of having a similar qualtor of reproduction in all theatres requires conderable work of one nature or another. There the many items causing variation in reproduction theatres having identical reproducing systems, one of these are: Theatre acoustics, stage oustics, size and shape of auditorium and stage, cation of speaker system on stage and level of e reproduced sound. These items will be example.

During the early days of sound motion pictures ry little was known of the requirements necesfor a theatre type loudspeaker. It was genally assumed that a speaker system that gave od music reproduction in a theatre was satisctory. However, this was not necessarily true hen dialogue reproduction was taken into ac-unt. The first RCA Photophone speaker sysms consisted of groups of 12-inch cone units ounted around a non-porous picture screen. his was found to give good music reproduction, it the speech intelligibility and illustion were cking. A further improvement was made by sing several cone type units mounted in flat affles and placed back of a porous screen. It ight be mentioned here that the early type of ound screens would be found very unsatisfacry today. This improved speaker system did ive some better results, but there was a certain ement lacking which indicated itself by the act that a given sound system reproducing a iven film would sound satisfactory in one the-re and not in another. This was largely due to he difference in acoustic properties of the thetres and the fact that the speaker systems did ot have a satisfactory directional characteristic. further improvements were made by adding a irectional baffle to the speaker units and this nproved the distribution and speech reproducon to a great degree. By this time theatre acouscs began to receive some recognition and acousc surveys were made which indicated that a high ercentage of theatres needed treatment. After ne use of the directional baffle speaker for sevral years the requisites for a satisfactory speakr system for theatre work became more appar-The major requirements were as follows:

(1) Suitable frequency response.(2) Adequate power handling capacity.

(3) Units with different angular coverages for various size theatres.

(4) Speaker system to have such dimensions that will allow its use in the average heatre.

(5) Efficiency.

With these ideas in mind the present two-way peaker systems were developed.

RCA Two-Way Speaker System

The standard RCA Two-Way Speaker System consists of a high frequency baffle with two high requency units, one or two low frequency baffles and units, a flat baffle extension and a dividing network and matching transformers. Figure 1 hows the assembly of such a speaker system.

The high frequency baffle is a metal cellular torn having from nine to eighteen cells, depending upon the angular coverage desired. Each affle is powered by two high frequency units. Figure 2 shows two views of the M1-1464 ninetell baffle. This baffle has a coverage of 52 legrees in the vertical and horizontal plane. The tecompanying table gives the number of cells and angular coverage of the higher frequency baffles.

The RCA high frequency unit is a non-metallic

cone type speaker capable of handling high power and not susceptible to damage due to impact type of sounds having peaks of high order. Due to the rugged type of construction of this unit it is possible for the field service engineers to make repairs in the field where necessary. The low frequency baffle known as MI-1456 is a folded type of horn capable of reproducing the lowest frequency necessary for theatre work. This baffle is so constructed that its depth is only 30 inches, a desirable feature where a minimum of space is available back of the picture screen, and is powered by two low frequency units. Generally the two-way speaker system is installed with two MI-1456 low frequency baffles and an MI-1459 flat baffle extension which provides a mounting for the two baffles and also extends the extreme low frequency response of the speaker system.

A block schematic of a standard two-way speaker setup is shown in Figure 3. In any two-way speaker system the frequencies below a certain value are fed to one set of speakers and frequencies above that value are fed to another set of speakers; this is accomplished by means of a dividing network. In the RCA system the MI-1483A network is generally set for a 300 cycle crossover. The matching transformers shown in Figure 3 are for matching the 15 ohm network output to any desired number of speakers.

In setting up a standard theatre speaker system there are certain general rules which should be followed. A very important factor in this connection is to have an approved sound screen so that the loss of high frequencies and definition is as low as possible. The speaker should generally be mounted as close to the screen as possible. The speaker assembly should be mounted in such a way that the center of the high frequency baffle is two thirds of the picture height. Due to differences in acoustic properties between theatres, some change in the electrical characteristic of the amplifying system supplying power to the speakers is sometimes necessary.

Noise Level in Theatre Auditoriums

The noise level in theatre auditoriums has much to do with the resultant sound obtained in theatres. Volume setting of the reproducing system in the theatre is generally adjusted to give satisfactory loudness on normal dialogue. When a recording which has an excessive dialogue volume range is played under such a condition the low level passages will be below the noise level in the theatre and therefore unintelligible. If the reproducing system volume setting is increased to get intelligibility on the low level passages, the high level passages become too loud and theatre managements invariably object to such a condition. This latter condition also tends to decrease intelligibility in theatres with poor acoustic properties due to increased echo and reverberation effects.

There are a number of sources of noise in theatre auditoriums, such as ventilating and heating systems, audience noise, outside noises such as street traffic, and projection room noise. It is well worthwhile to eliminate as much noise in the theatre as possible since there is a certain

amount of noise which cannot be controlled and these uncontrollable sources of noise alone generally keep the noise level up to the maximum point for satisfactory reproduction of high volume range recordings.

Ventilating and heating system noises are usually of a low frequency nature and are caused by the fan and motor vibrations being transmitted to the air ducts and building proper. This can be corrected by proper mounting of motor and fan units on cushioned mountings, balancing motor armature and fan propellers and using a flexible type of connection between fan and air ducts. In some cases it may be necessary to line the inside of the air ducts nearest the fan with absorbent material. Audience noise is something that goes with theatre operation and although its effect is somewhat limited by the amount of absorption in the thearte, it is still a major item in the overall theatre noise level. Street traffic noises are generally of a low frequency nature or rumble and are due to vibration of the building or sidewalks and streets. The traffic noise entering through doors and other openings can be almost entirely eliminated by proper acoustic treatment and type of construction. Traffic noise is generally much higher in theatres during the summer season due to open doors and windows. This type of noise is very objectionable due to its erratic nature. By the use of suitable double doors and heavy velour draperies in auditorium openings the traffic noise can be decreased to a satisfactory level. This of course requires some type of ventilating and cooling system for sum-

Projection room noise in the auditorium is something that the majority of theatres seem to put up with, and it is something that can be corrected at a small cost. The reasons we may have put up with this condition for so long are that the projectionist is always in the projection room and seldom gets out to check the sound in the auditorium, and the managers on the other hand become accustomed to the noise and do not notice it. By the use of approved cushioned mountings for projectors, double-pane glass in projection and observation ports, and acoustic insulation of the front projection wall, the noise can be reduced to a satisfactory level.

Acoustics

The study of acoustics and its application to rooms or auditoriums received little attention until recent years when radio broadcasting and sound motion pictures became of importance. Since that time many methods and devices have been developed to further the study of acoustics and make measurements a relatively simple matter.

When sound motion picture reproducing equipment was first used in theatres it was noticed that some theatres had good sound and others poor sound. This can now be largely accounted for by a proper acoustic analysis of the theatres in question. Such a condition can be corrected by proper application of acoustic materials. This procedure is generally costly and theatre managements usually object to an ex-

MI-1464	9-Cell	$52\frac{1}{2}$	Degrees	Horizontal	$52\frac{1}{2}$	Degrees	Vertical
MI-1465	12-Cell	70	Degrees	Horizontal	$52\frac{1}{2}$	Degrees	Vertical
MI-1466	15-Cell	$87\frac{1}{2}$	Degrees	Horizontal	$52\frac{1}{2}$	Degrees	Vertical
MI-1467	18-Cell	105	Degrees	Horizontal	$52\frac{1}{2}$	Degrees	Vertical
MI-1471	10-Cell	$87\frac{1}{2}$	Degrees	Horizontal	35	Degrees	Vertical
MI-1472	12-Cell	105	Degrees	Horizontal	35	Degrees	Vertical



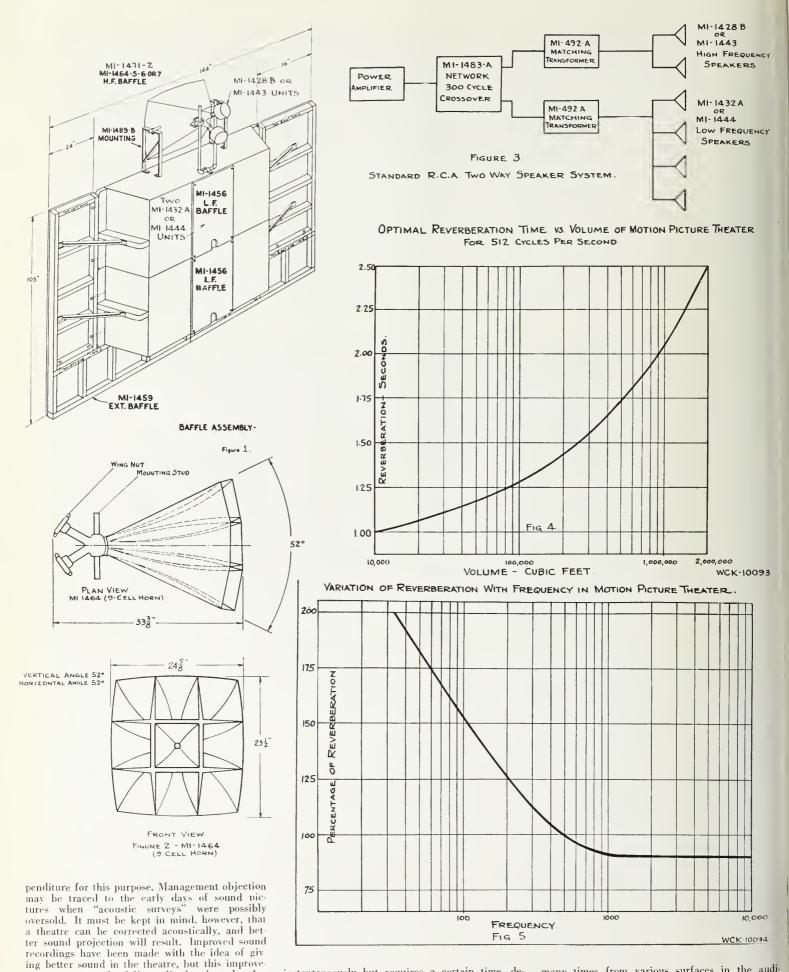
ASTAIRE and ROGERS
as the DANCING CASTLES
Pictures by MIEHLE

THESE STRIKING shots of Fred Astaire and Ginger Rogers as the "Ic Castles," Vernon and Irene, in RKO-Radio's sensational musical hit on the career of the famous dance team of pre-war days, are by John stillman member of Local 659, IATSE. They feature the many dance results to the contract of the career of the famous dance results are the career of the famous dance results.



y e stars in the film, and complete an outstanding series of exploitail pictures that have already been seen in newspapers, magazines, and effective billboards, exploiting the picture. The clean-cut tend thees stills is particularly interesting as an example of modern

still photography, taking full advantage of fast films and new style technique, since so many of these shots capture the lively personalities of this famous dancing pair, not only with unusual clarity, but also with excellent timing to secure the most impressive effect.



atre has optimum acoustic properties, pendi If a source of sound is set up in an auditorium, the intensity at a given point does not build up

instantaneously but requires a certain time, depending upon the frequency of the sound and the acoustic properties of the auditorium. The sound which leaves a given source is reflected many times from various surfaces in the auditorium before it is completely absorbed. These reflections add to the intensity at a given point and a steady state condition is reached when

ment can never be fully realized unless the the-

Rear Projection Report

Due to lack of space the second installment of the Academy Research Council's recommendations on rear projection equipment standards is held over until the May issue. Full text of this important report is being published in *International Photographer* as a service "for the record" for the benefit of our international readers and those studio technicians who like to have material conveniently available for reference in their files of the magazine.

he rate at which sound is absorbed is equal to he rate at which sound is being given out by he source. These conditions apply to the decay of sound in an auditorium except in the reverse order; that is the sound persists for a certain ime after the source is stopped. This prolongation of sound in an auditorium is known as everheration, and it is the most important item in the consideration of auditorium acoustics.

The reverberation time for a given frequency depends upon the volume of the auditorium and he amount of absorption in same. If an audiorium has a long reverberation time it produces poor speech intelligibility due to a "piling up" of successive spoken syllables. This condition can be carried to the other extreme with a result hat a very low reverberation time will give good ntelligibility; however a lack of brilliance will be noticed on speech and especially on music. This latter condition calls for much more power from the speaker for a given volume effect. Due o the difficulties encountered with too long or oo short reverberation time, it has been found hat for given sizes of auditoriums optimum time as shown by Figure 4 will give best results for sound motion picture theatres. It has also been ound that the reverberation time should increase is the frequency decreases below 1000 cycles, as shown by Figure 5, so that all equally loud components of speech and music will decay at equal

The use of heavy carpets and padding in all isles in the theatre decreases the noise level and it the same time adds to the total absorption in the theatre. Good upholstered seats in the heatre add greatly to the total absorption. This ilso provides the theatre with a more uniform acoustic characteristic whether the seats are occupied or not.

The stage or space back of the screen should also receive some acoustic consideration. In general the surface in back of the speaker should be reated with a highly absorbent material. This acoustic treatment should be such that very little sound can be heard backstage. When this is so, very little "boominess" or stage rumble will result.

In general it can be said that good sound proection in theatres depends very much upon optimum acoustic properties and a suitable peaker system correctly installed.



Showdown on Color

International Photographer to start series of articles covering all angles of color situation, bringing technical and shooting ideas up to date.

Unquestionably the outstanding topic of discussion in studio technical circles is color. There is much rumor and conjecture as to the early announcement of radical and important improvements in color photography and laboratory processing for feature production. In answer to intensive reader demand from both technicians and executives, Interational Photographer begins a complete analysis of the color situation with the May issue.

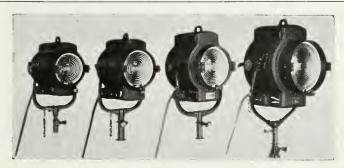
This series is the result of months of study and matching of notes by technicians and executives from all branches of the industry, who are in a position to talk with authority, who have been cooperating with the editors of INTERNATIONAL PHOTOGRAPHER. As a result we have available much information on the plans, methods, photographic technique and laboratory processing principles of all the companies actively engaged in color work. This is supplemented with a wealth of practical information and production tips on the proper technique for exposing color negative.

A great deal of this information has been in our files for some time and has been withheld from publication as a courtesy to research workers of the leading color concerns who have been completing experiments on new and improved methods.

Within the next few months these researches will result in a series of sensational developments from the leading color concerns.

We are convinced that this series will answer the keen demand throughout the industry for a clear, concise, factual presentation of the color situation from all angles.

In announcing this series, the editors of International Photographer also wish to throw open its pages to any and every bona fide worker in the color field who has anything important to say on the subject. The purpose of this series is to give every organization or individual researcher an opportunity to frankly and honestly present their claims and plans and to provide readers of International Photographer with an authoritative picture of the situation as it stands today.



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NEW SREELING THE BATMEN. Above: Newsreel photographers of Local 644, IATSE, down in Florida to shoot the World's Champion New York Yankees in spring training, left to right: Jim Buchanon, Paramount; Ty Sanders, Universal; Leo Rossi, News of the Day; Emile Montemurrio, Fox;

Joe Gibson, Pathe; picture by John Lodwick News Service, St. Petersburg, Florida; Below: Charles Perryman, member of Local 659, IATSE, photographs for News of the Day, the famed "bat-man" ski expert, Bill Dean, in Washington snow country.

NEWS OF THE MONTH

Fernstrom back from color photography jaunt; Society of Motion Picture Engineers bringing latest dope on television of Hollywood; studio technicians invited to attend sessions April 17-21; cooperation with news photographers.

Fernstrom's Color Jaunt

Description Back from a nine month's trip shooting unisual pictures in Cinecolor for Scientific Films, inc., producers of Popular Science and Unusual Decupations on the screen, and released by Paranount, is Ray Fernstrom, veteran member of Local 659. While photographing the Texas Rangers in the Lone Star state they made him a member, presenting him with gun, belts and other parabhernalia. It took four days to round up 200 nead of cattle for one sequence in this picture. He made air shots and ground shots along the Rio Grande over a period of about three weeks and every one had beautiful cloud effects. From Texas, Fernstrom hopped to the penitentiary at Parchman, Miss., making Popular Science subects there.

Three weeks was spent in shooting submarines nteriors and exteriors in New London, Conn., at he United States submarine base. He made three lives, lashed to the periscope, to get certain angles he wanted. Fernstrom says this is the first lime a submarine picture has been made in color. This may be seen in the current issue of Popular Science on the screen.

Another assignment was a picture on television n Philadelphia. In Provincetown he visited a woman who makes a living making gowns, hats, tc., out of ordinary fish nets. In this connection n Texas he found a man who raises armadillos or the purpose of making everything from baskts to hats out of them. He also photographed Texas youngsters making paintings with colored nud. Another photographed feature was of a nan in Guilford, Conn. who has a complete fire department as a hobby. He claims to have the most powerful pumping engine in the United States. This enthusiast has a tie-up with the fire lepartment whereby he goes to the fire with his equipment just the same as they do.

In Washington, D.C., Fernstrom photographed he only person who signs the President's name, Miss Jeanne Kavanaugh.

A former newsreel ace, Fernstrom prepares his own script, submits it for O.K. and then works

Another Angle

There has been considerable pro and con discussion of the articles on the still photography situation by John LeRoy Johnston, Walter Wanegr's publicity director, and Jimmy Doolittle, ace color and black-andwhite stillman member of Local 659, IATSE, in the last two issues of International Photographer. An interesting and entirely new slant on the functions and duties of the stillman will be presented in next month's issue by Art Marion, veteran member of Local 659, who points out that the still photographer doesn't spend all his time standing around waiting to try and snap publicity stills. Watch for Marion's interesting discussion of many important pictures that the still photographer must shoot—and well!—that never see publication.

from that. He expects to start out again a short time when he will freelance for Popular Science and Unusual Occupations, produced by Jerry Fairbanks and Bob Carlisle, and other Paramount novelty shorts reels.

SMPE Invites Technicians

• Bringing an important demonstration and discussion of television to the studio doors in Hollywood, annual spring convention of the Society of Motion Picture Engineers will be held April 17-21 in Hollywood, with headquarters at the Hollywood Roosevelt Hotel. Studio technicians are invited by the SMPE to attend the sessions, tentative program for which is announced as follows:

Monday, April 17th

9:00 a.m.—Registration; Blossom Room.

10:00 a.m. to 12:00 p.m.—BLOSSOM ROOM; GENERAL AND BUSINESS SESSION; H. G. Tasker, Chairman. Report of the Convention Committee; W. C. Kunzmann, Convention Vice-President (5 min.) Report of the Membership and Subscription Committee; E. R. Geib, Chairman (5 min.) Welcome by President E. A. Williford (5 min.) Society Business; E. A. Williford, Chairman (10 min. Report of the Progress Committee; J. G. Frayne, Chairman (30 min.) "Safekeeping the Picture Industry;" K. W... Keene, Underwriters' Laboratories, San Francisco (20 min.) "Review of Foreign Film Markets"; N. D. Golden, Motion Picture Division, Department of Commerce, Washington, D. C. (20 min.)

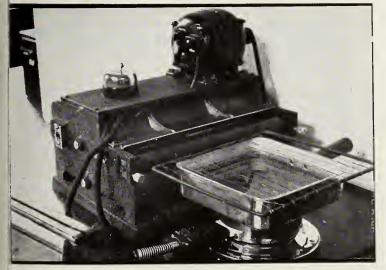
12:30 p.m.—Florentine Room; Informal Get-Together Luncheon,

2:00 p.m. to 5:00 p.m.—BLOSSOM ROOM; GENERAL SESSION. "The Polyrhetor—A 150-Channel Film Reproducer"; G. T. Stanton, Electrical Research Products, Inc., and F. R. Marion and D. V. Water, Western Electric Co., New York (20 min.) (Demonstration.) "The Status of Lens Making in America"; W. B. Rayton, Bausch & Lomb Optical Co., Rochester (30 min.) "New Frontiers for the Documentary Film"; A. A. Mercey, United States Film Service, National Emergency Council, Washington, D. C. (18 min.) "The Time Telescope"; C. R. Veber, Department of Biophotography, Rutgers University, New Brunswick, N. J. (35 min.) (Demonstration.) "The Preservation of History in the Crypt of Civilization"; T. K. Peters, Oglethorpe University, Ga. (15 min.) (Demonstration.)

8:00 p.m. to 10:30 p.m.—BLOSSOM ROOM; SOUND SESSION. "Lamps and Optical Systems for Sound Reproduction"; F. E. Carlson, General Electric Co., Cleveland (60 min.) "A New Magnetic Recorder and Its Adaptations"; S. J. Begun, The Brush Development Company, Cleveland (15 min.) (Demonstration.) "Microphones for Sound Recording"; F. L. Hopper, Electrical Research Products, Inc., Hollywood (15 min.) "A Light-Weight Sound Recording System"; F. L. Hopper, E. C. Manderfeld, and R. R. Scoville, Electrical Research Products, Inc., Hollywood (15 min.) "Special Effects"; L. Witte, Twentieth Century-Fox Film Corp., Hollywood (15 min.)

Tuesday, April 18th

10:00 a.m. to 12:30 p.m.—BLOSSOM ROOM; REGISTRATION CONTINUED, PROJECTION AND 16 MM SESSION. "Large-Size Non-



TIP FROM WATSON. Illustrated herewith is a device that will appeal to professional and amateur still photographers who turn out a large number of prints and are bothered by the cracking that occurs during hot, dry weather. This inexpensive steaming device to insure sealing in proper moisture when running prints through the ferrotype, was developed by George Watson, head of the Acme-NEA bureau at Los Angeles. Details may be obtained by writing him care of Acme-Nea at the Illustrated Daily News Building, Los Angeles, Watson is past president of the Los Angeles Press Photographers Association, and plans are now under way through this organization and Local 659 for a cooperative exchange of technical information between studio and newspaper cameramen through the medium of International Photographer.

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Rotating High-Intensity Carbons and Their Possible Application to Motion Picture Projection;
D. B. Joy, W. W. Lozier, and R. Simon, National Carbon Co., Fostoria, Ohio (15 min.)
Report of the Projection Practice Committee; H. Rubin, Chairman (15 min.) Report of the Exchange Practice Committee; A. L. Schwulberg, Chairman (10 min.) "The The Motion Picture in Education"; A. Shapiro, Ampro Corp., Chicago (20 min.) (Demonstration.) "A Reel and Tray Developing Machine"; R. S. Leonard, Municipal Light and Power System, Seattle, Wash. (12 min.) (Demonstration.) "New 16 MM Recording Equipment"; D. Candy, Canudy Sound Appliance Co., Cleveland (10 min.) "Notes on French 16 MM Equipment"; D. Canudy, Canady Sound Appliance Co., Cleveland (10 min.)

2:30 p.m. to 5:30 p.m.-Visit to Paramount Publix Studios, Hollywood, Calif.; under the direction of Loren L. Ryder, Director of Recording. This visit will be restricted to the eastern delegates to the convention, in view of the fact that the facilities at the studio will permit the reception of not moer than 250 persons. The visit will include an opportunity of viewing projection background shooting and visiting the stages where special effects and miniature work are carried out. Visits will be made also to the Sound Department, Dubbing Department, and the production stages where picture shooting will be witnessed.

8:00 p.m. to 10:30 p.m.—FILMARTE TILEA-TRE; GENERAL SESSION. "Fluorescent Lighting"; Inman and W. H. Robinson, Ir., General Electric Co., Los Angeles (15 min.) "The Present Technical Status of 16 MM Sound-on-Film"; J. A. Maurer, Berndt-Muurer Corp., New York, V. Y. (30 min.) (Demonstration.) "Recording and Reproducing Characteristics"; K. F. Morgan and D. P. Loye, Electrical Research Products, Inc., Hollywood (20 min.) (Demonstration.) "Analysis and Measurement of Distortion in

Variable-Density Recording"; J. G. Frayne and R. R. Scoville, Electrical Research Products, Inc., Hollywood (30 min.)

Wednesday, April 19th

10:00 a.m. to 12:30 p.m.—BLOSSOM ROOM; SOUND SESSION. "Controlled Sound Reflection in Review Rooms and Theatre"; C. M. Mugler, Acoustical Engineering Co., Los Angeles (15 min.) "Sound-Track Projection"; G. M. Best, Warner Bros., Burbank (15 min.) "A Multiduty Motor System"; A. L. Holcomb, Electrical Research Products, Inc., Hollywood (20 min.) "Push-Pull Audio Transformer Design for Minimuni Amplifier Distortion and Intermodulation"; B. F. Miller,, Warner Bros., Burbank (20 min.) "Cardioid Directional Microphone"; R. N. Marshall und W. R. Harry, Bell Telephone Laboratories, New York (15 min.) "A New Mobile Film Recording System"; B. Kreuzer. RCA Manufacturing Co., Los Angeles, and C. L. Lootens, Republic Productions, Inc., North Hollywood (10 min.) Note: The mobile unit will be parked outside the hotel for the members' inspection at the end of the session. (Demon-

2:30 p.m. to 5:30 p.m.—Open afternoon.

8:00 p.m. to 10:30 p.m.—FILMARTE THEATRE; SOUND SESSION. "A Direct Positive System of Sound Recording"; G. L. Dimmick, System of Sound Recording; G. L. Dannier, RCA Manufacturing Co., Camden, N. J., and A. C. Blaney, RCA Manufacturing Co., Hollywood (20 min.) (Demonstration.) "A Newly wood (20 min.) (Demonstration.) "A Newly Designed Sound Motion Picture Reproducing Equipment"; J. S. Pesce, RCA Manufacturing Co., Camden, N. J. (30 min.) (Demonstration.) "Class A-B Push-Pull Recording System"; C. H. Cartwright and W. S. Thompson, RCA Manufacturing Co., Hollywood (20 min.) (Demonstration.) "Further Improvements in Light-Rec-(Demonord Reproducers and Theoretical Considerations

Entering into Their Design"; A. L. Williams The Brush Development Co., Cleveland (20 min.) (Demonstration.) "New Method for Determina tion of Bias Current for Light-Valves"; C. R Daily, Paramount Productions, Hollywood (It min.) "New Method of Checking Variable-Area Track Processing"; C. R. Daily, Paramount Pro ductions, Hollywood (15 min.)

Thursday, April 20th

10:00 a.m. to 12:30 p.m.—BLOSSOM ROOM: LABORATORY AND PHOTOGRAPHIC. "A Direct-Reading Photoelectric Densitometer"; D R. White, DuPont Film Manufacturing Co., Parlin, N. J. (15 min.) "An Instrument for the Absolute Measurement of the Graininess of Photographic Emulsions"; A. Goetz, W. O. Gould and A. Dember, California Institute of Tech nology, Pasadena (25 min.) "Mathematical Exnology, Pasadena (25 min.) "Mathematical Expression of Developer Behavior"; J. R. Alburger, RCA Manufacturing Co., Camden, N. J. (30 min.) "RCA Aluminate Developers"; J. R. Alburger, RCA Manufacturing Co., Camden, N. J. (30 min.) "Some Factors Governing the Decign Construction and Operation of Matin sign, Construction and Operation of a Motion Picture Laboratory"; Report of the Committee on Laboratory Practice; D. E. Hyndman, Chair man (20 min.) "Simplifying and Controlling Film Travel Through a Developing Machine' J. F. VanLeuven, Fonda Machinery Co., Los Angeles (10 min.) "Warner Bros.' Laboratory"; F. Gage, Warner Bros. Studio, Burbank (15 min).

2:30 p.m. to 5:30 p.m.—Visit to Warner Bros. First National Studio, Culver City, Calif.; under the direction of Major Nathan Levinson, Director of Recording. Visits will be made to the Wardrobe and Property Departments, and also to the new unit of the Crafts Building. An opportunity will also be afforded to visit the new ultramodern laboratory, in addition to a general sightseeing tour of the lot.

p.m.-BLOSSOM ROOM; SEMI-AN-NUAL BANQUET. Short addresses by eminent members of the industry, names to be announced later. Introduction of stars and prominent guests. Dancing and entertainment.

Friday, April 21st

10:00 a.m. to 12:30 p.m.—Open morning.

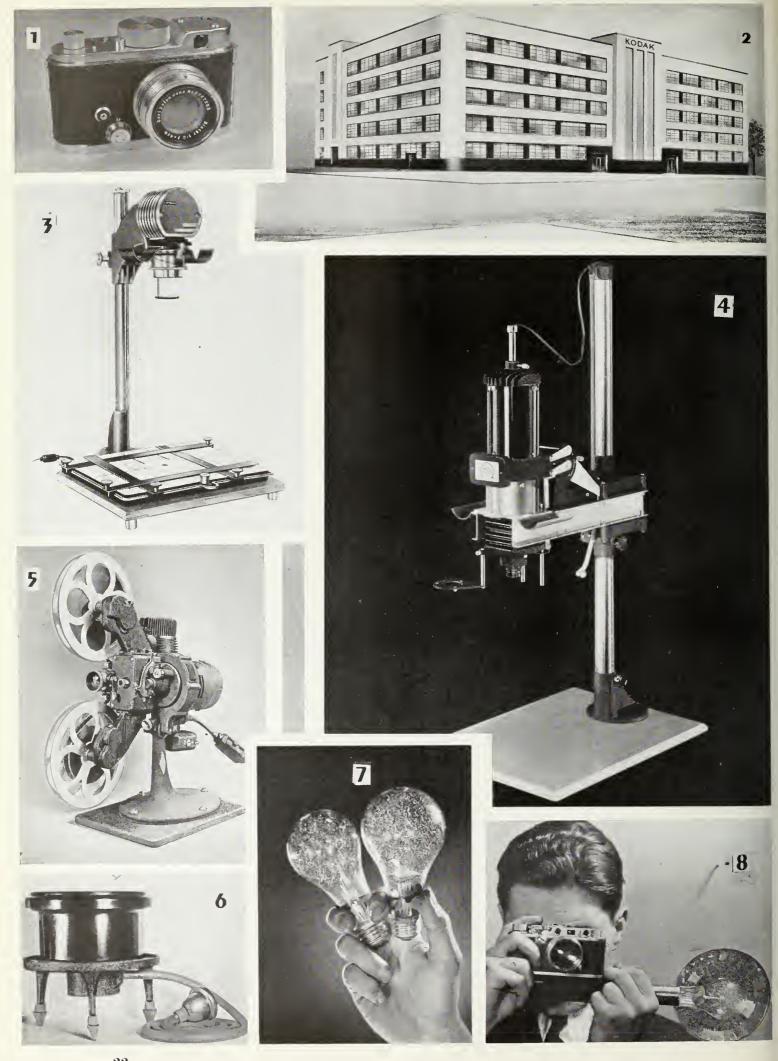
2:30 p.m. to 3:30 p.m.—BLOSSOM ROOM; STUDIO PRACTICE. "Methods of Key Lighting on Motion Picture Sets"; D. Clark, Twentieth Century-Fox Film Corp., Hollywood. "Recent Improvements in Carbons for Motion Picture Set Lighting"; D. B. Joy, W. W. Lozier, and R. J. Zavesky, National Carbon Co., Fostoria, Ohio (15 min.) Report of the Studio Lighting Committee; C. W. Handley, Chairman (15 min.) "Remarks on the Work of the Research Council Process Projection Equipment Committee"; F. Edouart, Paramount, Hollywood (20 min.) "Carbons for Rear Projection Motion Picture Studios"; D. B. Joy, W. W. Lozier, and M. R. Null, National Carbon Co., Fostoria, Ohio (15 min.) "Fox Silent Camera"; D. Clark, Twendard Camera"; D. Clark, Twendard Camera"; D. Clark, Twendard Camera (1997). tieth Century-Fox Film Corp., Hollywood (15 min.) "Flicker in Motion Pictures"; L. D. Grignon, Paramount Productions, Inc., Hollywood (15

8:00 p.m. to 10:30 p.m.—BLOSSOM ROOM; TELEVISION SESSION. "An Introduction to Television Production"; H. R. Lubcke, Don Lee Broadcasting Co., Los Angeles (20 min.) Report of the Television Committee; Dr. A. N. Goldsmith, Chairman (10 min.) "Application" of Motion Picture Film to Television' Engstrom and G. L. Beers, RCA Manufacturing Co., Camden, N. J. (30 min.) "Continuous Type Film Scanner for Television"; P. T. Goldmark, Columbia Broadcasting Co., New York (15 min.) "Television Studio Technic"; A. W. Protzman, National Broadcasting Co., New York (15 min.)
"Television Lighting": William C. Eddy, National Broadcasting Co., New York (15 min.)
"Dumont Television"; A. B. Dumont, Allen B. DuMont Laboratories, Passaic, N. J. (15 min.)

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EASTMAN Plus-X... Super-XX...Background-X



TRADEWINDS

News of New Products: Robot II, Eastman expansion, Argostat enlarger, new Omega model, B&H geared projector, Canady Turbo-Turbulator, new Wabash Superflash bulbs, Leica sychronizer; Bardwell & McAlister Spots; Price Slashes.

1) 35mm Robot II

The pioneer sequence miniature camera, the Robot, now has a companion model Robot II on he American market, providing the larger stanlard miniature camera frame size as against the 24mm size of the original Robot. Features of he larger Robot include a built-in sequence flasher for synchronization of flash bulbs in getting night shots, a new type shutter-setting knob, with peeds of 1/500, 1/250, 1/100, 1/50, 1/10, 1/25, /5, 1/2 second and bulb, new film magazines for Robot daylight loading spools and other standard 35mm cores. The lens is the Meyer Primotar :3.5, but at additional cost a Zeiss Biotar f:2 and Zeiss Sonnar f:4.5, 7.5 cm. tele-lens are avail-U. S. distribution is through Intercontinenal Marketing Corp. of N. Y.

2) Eastman Factory Additions

● Eastman camera factory at Rochester is shown as it will look when completed, providing production facilities for the largest group of American craftsmen ever assembled in the photographic industry. In line with the expansion program, Eastman put through a wide slash in prices through their camera line, effective last month, as a result of the increased efficiency in production toward lowered manufacturing costs.

3) Argostat Enlarger

• Feature of the new Argostat Enlarger for use with the Argus Models C and C2 Argus f:3.5 camera lens as the objective lens, is a new type remote control device for critical focusing. While the lamphouse and lens are moved up and down on the column for general focusing, through the ocusing disc at the base of the column a vernierdrive mechanism makes it possible to attain critical focusing of the objective lens without turning the lens mount itself. The Argostat enlarges to 12x18 on the base and to 11x14 on the Argus Micrograin Easel, which is illustrated with the new type enlarger. As in other Argus enlargers, reflected light is used instead of direct light, with the 100-watt projection lamp reflecting from a 45-degree angle mirror for flat field illumination and maximum coolness. The Argostat will sell in the \$50 price range.

4) Model C Omega

● Handling film up to 2½x3½, the Model C Omega enlarger, introduced last month by Simmon Brothers of Long Island City, N. Y., is especially designed for the photographer who works in more than one miniature film size. Interchangeable dust-free negative carriers, double condensor assemblies and lens boards allow easy and speedy change-over from one film size to another. A 75-watt 110-volt G.E. projection bulb and the double condensor system permit short

New products illustrated on opposite page are described in the Tridewinds section and identified by numerals.

Worth Investigation

Improved production methods plus keen competition between the outstanding photographic manufacturing companies is resulting in a sweeping series of price slashes accompanied by the announcement of new models and new film emulsions for the miniature camera, the larger size still cameras and the 16 mm camera, emulsion and projection equipment lines.

Bell & Howell, Eastman and Agfa Ansco are the leaders in this field in point of recent trade announcements, closely followed by DeVry and Ampro. Professional and amateur readers of International Photographer will find their dealers ready to supply information on these new price slashes and model changes and improvements.

We regret that lack of space prevents a complete listing of the price cuts and new trade announcements of the past few weeks. Highlights appear in this month's *Tradewinds* section.

exposures on the slower enlarging papers. Simmon and Bausch & Lomb Tessar lenses are available. Price is \$97.50, with detachable lens board, but without lens.

5) Gear-Driven Filmaster

 Bell & Howell has replaced three former 16mm projector models with a new entirely gear-driven moderately priced machine, to be known as the Filmaster, announcing that this is the first 16mm projector with such specifications to appear on the American market in the low-priced field. Gears are very silent, being enclosed in rigid aluminum alloy castings. Through shifting of one lever, the gear system rewinds film quickly and silently. Either 300, 400, 500 or 750-watt lamps may be used. The lens furnished at the regular price of \$139 is a 2-inch f:1.6, which is interchangeable with eight different focal length lenses. No-glare pilot light illuminates the mechanism when required. An automatic safety shutter permits projection of any frame as a still. Reels furnished are 400 ft., and a drop front, compartmented carrying case is furnished at the price quoted.

6) Turbo-Turbulator

● Don Canady's Sound Appliance Company of Cleveland, Ohio, is marketing with considerable success a scientifically designed water-powered Turbo-Turbulator, for turbulation of developing solutions during development of miniature films. It produces the non-directional turbulation recommended by experts. Degree of turbulation is controlled by the water faucet handle. Model A illustrated will accommodate tanks 5½ inches in diameter. The frame and turbine housing is one piece of cast aluminum, with baked enamel

finish. Faucet connector and $2\frac{1/2}{2}$ -foot high grade rubber hose are included at the new low price of \$3.50 just announced, but not the developing tank. A larger model for professional use soon will be on the market.

7) New Wabash Superflash Bulbs

 Wabash Photolamp Corporation of Brooklyn, N. Y., has added two new sizes to their line of Superflash bulbs, the No. 2A and No. 3A sizes. The new No. 2A Superflash enables the press photographer to use his standard 4x5-inch focal plane Graflex and Speed Graphic for "freezing" high speed action at 1/1000th of a second. New York newspapers now using the new No. 2A with the 4x5-inch focal plane Speed Graphic are securing excellent negatives with uniform over-all density at speeds at $1/1000 \, \mathrm{th}$, $1/860 \, \mathrm{th}$ and 1/680th of a second, with stops varying from f:4.5 to f:11, and distances from 4 to 45 feet indoors and at night outdoors. The "plateau" of uniform peak light from this new size lasts a full 1/16th of a second, while most of its high light output of 75,000 lumen seconds is usable peak-light illumination spread over practically the entire duration of the flash. The No. 3A Superflash is a new commercial size that offers in one compact size practically every requirement of the commercial and professional photographer in the studio or on location. Although much smaller and handier than ordinary sizes, it is packed with extra power and greater photographically effective illumination in a brilliant, "high-peak" flash that penetrates distance and covers large, wide areas. Since the No. 3A is the same synchronization band as the No. 2 and No. 3, it can be used successfully in multiple flashing with either or both of these flashes. The total light output of the No. 3A is 100,000 lumen

8) Leica Flash Unit Model V

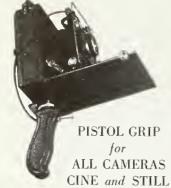
• Increased latitude and new operating conveniences are provided by the new Leica Synchronized Flash Unit Model V, recently marketed by E. Leitz, Inc. In use, the battery and reflector of this new model is firmly attached to the tripod socket of the camera baseplate, while the compact synchronizing head slips into the accessories clip and lies almost flush against the back of the camera. A short length of electric cord, extending behind the camera, joins the two parts of the flash unit.

The Model V may be mounted for use, or dismounted, in less than a minute. Bulbs may be slipped into the springed lamp socket, discharged, and replaced in quick succession. A 2.5-volt test lamp, situated in the lamp socket head, indicates when the battery current is flowing. The film and shutter transport of the Leica may be wound either before or after the flash bulb has been inserted into its socket without discharging the bulb prematurely.

The Model V is designed for use with long-peak hydronalium wire-filled bulbs. The lamp reflector may be set in two positions—a low position for properly centering Superflash Press 40,000 bulbs and a higher position for Superflash No. 2 lamps. Retail price is \$19.50.



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Two views of Bardwell & McAlister quick focus l evers, on which patents are pending. At left, for the 2000-watt lamp; at right, for the Baby Keg-Lite, Latter's knob goes right through under lamp, can be worked from front or rear.

Fast Lamps for Fast Films

• Visitors to studio sets who haven't watched shooting recently are amazed at the new type lighting setups, with their smaller and more efficient lamps. A typical instance is Edward Small's production of "The Man in the Iron Mask," costarring Louis Hayward and Joan Bennett, which Robert Planck is photographing, with a camera crew consisting of: R. A. Webb, operative cameraman; Van Wormer, first assistant; Russ Hover, second assistant; all members of Local 659, IATSE.

There are no clumsy big kleigs or old-fashioned arcs on Planck's set. Using the new Eastman Super-X, with its terrific speed and definition, lighting must be cut down in combination with the clever use of diffusion filters and new type make-ups. Lighting engineers have been well in tune with the times, matching the new type negative emulsions with new type lamps. Planck is using a battery of Bardwell-McAlister Baby Keg-Lites for many of his scenes.

These new 500 and 750-watt Baby Keg-Lites have won high regard from camera departments in many studios for their better-controlled light and virtual elimination of stray rays so easily picked up by the new fast films.

Planck's experience with the new lamps is highlighted, he says, by the ease of operation through the quick-focusing device, illustrated herewith, on which patents are pending. This consists of a lever arm, protruding from both the front and rear, which is moved from side to side for focusing the spot. So simple is this mechanism that a highly placed lamp may be focused by merely exerting a slight pressure against the protruding lever.

The saving in time over the old fashioned method of knob-twisting with it's annoying noise adds considerable to the economic feature of this latest lamp development, although quick focusing devices have always been an exclusive feature of Bardwell & McAlister products.

Studios are finding particularly interesting, the fact that proper ventilation in the Baby Keg lowers burning temperature, thereby increasing the life of the globe and reducing softening or blistering to a minimum. Light output will focus from a 4 degree spot to a 44 degree flood. Photometric tests show the spectral quality of the light to be of correct color temperature for color stills, and they also are finding much use in this brand of photography. A spherical mirror and frame is adjusted and locked in proper focus at the factory. The lamp may be supplied with either medium prefocus or medium bipost socket.

Baby Keg-Lites are now in use by Warner Bros., 20th Century Fox, Paramount, General Service Studios, R. K. O. and other production

Film Libraries Switch

● Eastman Kodak last month announced discontinuation of their Kodascope libraries division and simultaneously Bell & Howell announced taking over distribution of the Kodascope distributed Universal and other independent releases of 18 features and 15 short subjects, including "Show Boat" and "My Man Godfrey," outstanding Universal hits of recent years. Eastman announcement stated the move was due to most leading dealers in amateur movie equipment now having their own libraries of sound and silent films for home entertainment purposes, and frequently represent other sources of 8 mm and 16 mm releases. Bell & Howell stated that conditions under which the films were distributed will remain virtually unchanged.

New Memo Cameras

New American-made Agfa Memo miniature camera now at photographic dealers, is the result of several years' work in refining and improving the well-known original Memo camera. The new model, selling at \$35, is the answer to almost innumerable inquiries and requests for an advanced and modernized version of the original Memo, retaining features of the old model combined with improvements expected and furnished in the new.

A "double-frame" miniature, using perforated 35 mm film, the new Memo gives 24 pictures. $1 \cdot 7/16 \times 15/16$ inches in size, per cartridge of film. The new model is equipped with an Agfa Memar f3.5 corrected anastigmat lens focusing from $3\frac{1}{2}$ feet to infinity, and is fitted with a new and improved type of shutter designed for greater accuracy and giving speeds of 1/2 to 1/200 second, bulb and time.

Two exclusive features of the Memo are the arrangements for loading and transporting the film. The already widely sold Memo cartridge, which is used, eliminates threading and greatly simplifies loading. The film transport mechanism employs a patented sliding lever which advances film in one rapid motion without winding or window watching.

The Memo is finished in polished metal, black lacquer and black morocco leather. Its compactness is achieved by a pressed-steel frame and a hinged front platform that snaps quickly into picture-taking position. Other details include as standard equipment: brilliant, direct view finder; neckcord and eyelets; accessory clip; tripod socket; automatic exposure counter and built-in depth of field scale. In addition, color filters, sunshades and eveready leather carrying cases will be available as regular accessories.

Following closely on introduction of the new Agfa Memo camera, comes also a second model. This latest addition to the Agfa camera line is

enipped with an f4.5 lens and retails for \$25. I all other respects, the more recent f4.5 Memo is exactly like its counterpart.

RPI's Light Portable Unit

A new portable sound recording channel for bation work which weighs 84 percent less than enipment now in use with performance approxiriting the finest studio installations, has been dened by Electrical Research Products Inc., in claboration with the MGM sound department. I contrast with earlier location equipment, which vs housed in nine separate cases and weighed pounds complete, the two units of new aplatus weigh 150 pounds. The larger cabinet citains recording machine and associated contls including those for the camera motors. This tit weighs 102 pounds. Smaller case, weighing 4 pounds, contains all mixer, amplifier and noise thation equipment. The new channel, while eveloped primarily for location sound recording, nieves a degree of naturalness in recorded and that is comparable with the most elaborate rmanent channel installed for studio production.

Inth SVE Session in June

Ninth national conference of the Society for Sual Education, sponsored by the DeVry founction, has been set for June 19-22 with advance formation headquarters at 1111 Armitage Aveile, Chicago, Ill. Convention is held annually the Francis W. Parker school in Chicago. Rograms of this organization always are interestic and present much constructive material and alon. Already announced to appear are the following:

Mrs. Charles Joe Moore, director of Visual Inuction Bureau, University of Texas, Austin, xas, who will tell of the outstanding work of

Ir department in Texas schools;

Dr. I. E. Deer, of the MPPDA, who has done ich fine work with the "Secret of Success" aracter building films released by that organition;

Mrs. Richard M. McClure, president of the tter Films Council of Chicagoland, whose intrational addresses have shown a new way to ture through motion pictures:

ture through motion pictures; Dr. James E. Bliss of Western Reserve Univery who has done remarkable work in color, not ly in dentistry, but in athletics and other school

hiects:

Professor L. W. Cochran, of Iowa University, to will exhibit and explain Professor Barnes' bition studies, which have excited intense intense in engineering and industrial circles:

A. P. Heflin of the Lane Technical Highhool, Chicago, Ill., who will exhibit some of beir own films and describe their production d use;

Wm. G. Hart, director of Visual Education in e Harvey H. Lowrey School, of the Fordson pard of Education, Dearborn, Michigan, who ll exhibit and describe some original film proction in public school relations;

Alvin B. Roberts of the Gilson, Illinois Schools, to has conducted a valuable research study on a status of visual education in Illinois; he will be the Conference the results of this study;

B. A. Aughinbaugh, producer of the famous in Travelogues, and director of the State Dertment of Visual Education, Columbus, Ohio; Miss Kathryn Troy, who will be welcomed ain for her unique films on Marionettes; illiam L. Zeller, cinematographer of wild birds color, who will present new marvels of his ill, patience and imagination; E. W. Cooley, director of Cinematography,

auwatosa, Wisconsin, who will show his Indian ctures in color; Walter L. Grabski, Cleveland,

nio, travel films in color.

DeForest Training, Inc. will demonstrate their paratus used in teaching television. International Harvester Co. is sending L. A. Hawkins d W. M. Bastable to explain and show their w films.





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Jack Wade will be on hand from the Allis-Chalmers Manufacturing Co. with their latest film, "Hold That Farm." Also A. G. Weitzel from Firestone Tire & Rubber Co., H. C. Lamborn from Ford Motor Co., P. C. Smith from Caterpillar Tractor Co., and Stuart Grant from the Pure Oil Co.

The Chesapeake & Ohio Railroad will send a representative with their latest travel film and E. D. McGlone will represent United Air Lines. R. C. Anderson will show the new Technicolor films of the California Fruit Growers Association.

As usual, various government departments will be well represented. George T. Van der Hoef will exhibit the new FHA films; Mrs. Rebecca Hourwich Reyher, the WPA; A. A. Mercey, of "Plow That Broke the Plains," and "The River," will exhibit and explain the latest government documentaries.

News of Technicians Wanted

 About our new department for news of studio technicians, particularly members of Local 659, IATSE, and allied studio and theatre locals of the International Alliance, the editors of INTER-NATIONAL PHOTOGRAPHER and the magazine committee, under the chairmanship of Leon Shamory, regret that space devoted to the program of the SMPE convention caused the withholding of a number of stories for this issue, and wish to encourage professional workers to let us know interesting news of their activities. If you have a newsworthy item of technical interest communicate with Herbelt Aller or Ed Gibbons at the INTERNATIONAL PHOTOGRAPHER office.

bxalin Protective Finish

(The new Roxalin enamel finish, announced by Ill & Howell, has been exhaustively tested and sopted as standard on all Filmo 8 mm Cameras, r,y be specified at time of purchase for Filmo 70, mm cameras and Eyemo 35 mm cameras likely t see tropical use. It is claimed for the new fish that it proves highly resistant to conditions heat and humidity which cause quick deterionion in other types of camera enamel.

gfa Film Clips

Two new-type stainless steel film clips have len added to Agfa photographic equipment. The 'asy-Clips," are furnished in two sizes: the first inches wide selling at \$1.20 per dozen; and resecond 2 inches wide selling at \$1.80 per ozen. Special lead weights to fit these Clips as also available at \$1.20 per dozen. The new affa film clips provide both hooks and holes for loging purposes, have smooth rounded corners typevent scratching, and allow for easy attachant of lead weights.

sper-XX 16 mm. Negative

Safety Super-XX Panchromatic Negative Cinebdak Film is now available in 100-foot and 200-fot rolls for daylight loading, and 400-foot rolls darkroom loading, the Eastman Kodak Comny announces from Rochester, New York-fety Super-XX Panchromatic Negative Cinebdak Film is not processed by the Eastman mpany. It is not intended for reversal processis, but for development to a negative from which y number of positive prints may be made. It is not rolls, daylight loading, \$3.50; 50-foot rolls, daylight loading, \$7; 400-foot rolls, trkroom loading, \$14.

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PATENTS

Last month the following patents of inrest to readers of International Phographer were issued by the U. S. Patt Office. These selections and brief deriptions of new patents were prepared by obert W. Fulwider, well-known Los Anles attorney, specializing in patent and ade mark counsel.

). 2,145,914 — POLARIZING FILTER STRUCTURES. Heinrich Bartels, Germany, assignor to Zeiss Ikon Aktiengeselschaft. Dresden, Germany. Application Jan. 24, 1933. In Germany Feb. 3, 1937. 6 claims.

light filter consisting of two polarizing eleents rotatably mounted with respect to each

ier.

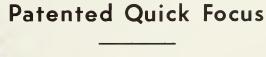
2,145,960—Color Photography. Christopher William Crouch Wheatley and Christopher Cameron Hope Wheatley, Kent, England. Application Oct. 20, 1937. In Great Britain Oct. 27, 1936. 7 claims.

photographic bleaching-out dye layer having a caching accelerator having a compound of dybdenum, chromium, tungsten, and uranium.

2,146,040—DEVELOPMENT OF SILVER HALIDE EMULSIONS IN COLOR. Gustav Wilmanns, Wolenkreis Bitterfeld, and Wilhelm Schneider, Germany, assignors to Agfa Ansco Corp. Application April 16, 1936. In Germany April 17, 1935. 3 claims.

color developing process in which a dye is de-

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posited by developing the film in a solution containing an orthomethylaminophenol, water, and an alkali.

No. 2,146,135—Apparatus for Producing Stere. OSCOPIC EFFECTS IN MOTION PICTURVS .Harold A. Adams, Bakersfield, and Ralph D. Lemert, Los Angeles, Calif. Application Aug. 3, 1936.

A stereoscopic attachment for motion picture cameras which includes an optical flat in the optical axis of the lens and means for swinging the flat right and left.

No. 2,146,170—FILM SUPPORTING AND DRIVING MEANS. William V. Brenbarger, Bell, and John F. Van Lueven, Los Angeles, Calif. Application Nov. 17, 1937. 10 claims.

A film supporting and driving means having two sets of rollers driven at different speeds and means for disengaging one set of rollers when the film tension exceeds a certain amount.

No. 2,146,634—Recording Apparatus for Color PHOTOGRAPHY. John E. Leonard, Berwick, Pa. Application Jan. 22, 1938. 1 claim.

A color motion picture camera in which a pair of color filters is oscillated in front of the same. No. 2,146,635—Projection Apparatus for Color PHOTOGRAPHY. John E. Leonard, Berwick, Pa. Application Jan. 22, 1938. 2 claims. A color motion picture projector in which a pair of color filters is oscillated in front of the film.

No. 2,146,905—Optical System. John H. McLeod and Fred E. Altman, Rochester, N. Y., assignors to Eastman Kodak Co. Application Oct. 7, 1936. 8 claims.

An optical system for producing a uniformly intense line of light and including a wide aperture objective and a toric lens.

No. 2,147,038—Apparatus for Trick Photog-RAPHY. Fred W. Jackman, Beverly Hills, Calif., assignor to Warner Bros. Pictures, Inc. Application Nov. 25, 1935. 1 claim.

An apparatus for enlarging or reducing the size of an image on a motion picture film, the distance between subject and the camera remaining constant, making use of a distorting lens between the subject and the camera.

No. 2,147,068—Color Photography. Albert W. Tondreau, Glendale, Calif., assignor to Warner Bros. Pictures, Inc. Application Mar. 20, 1937.

A color motion picture camera making use of number of different colored filters mounted on a rotatable shaft, and means for automatically disconnecting the filter disc after a predetermined number of pictures have been taken.

No. 2,147,489 — Multiple Reflector Stereo-Scopic. George L. Hills, San Bernardino, Calif., assignor to Dimensional Pictures Inc., Los Angeles, Calif. Application April 2, 1935. Renewed June 25, 1938. 6 claims.

An apparatus for producing stereoscopic motion pictures which makes use of a revolving member having a number of mirrors in the optical path of the image.

No. 2,147,499—METHOD FOR PRODUCING SOUND MOTION PICTURES AND APPARATUS. Oscar A. Ross, New York, N. Y. Application July 29, 1929. Renewed March 25, 1935. 13 claims.

A method of producing animated sound motion pictures which makes use of an indexed sound chart and a condensed word record of the sound. No. 2,147,623—Sound Film Recording System.

Eugene John Wender, Eng., assignor to British Ozaphane, Ltd., London, Eng. Application June 26, 1937. In Great Britain July 2 1936.

A sound recording system wherein two beams of light on opposite edges of the film move toward

and away from each other.
No. 2,147,683—Printing and Means Employed THEREFOR. Eastman A. Weaver, and Robert Inday, assignors to Comstock & Wescott, Inc., Boston, Mass. Application Dec. 28, 1935. 31

Color printing with imbibition matrices which are overexposed, and counteracting the effect of overexposure by removing some of the dye from No. 2,148,076—Motion Picture Camera. Thomas W. Kirkman, New York, N. Y. Application Oct. 7, 1936. 7 claims.

A motion picture camera in which the view through the view finder is cut off when the film is exhausted.

No. 2,148,260—THREE-DIMENSIONAL PROJECTION System. Sebastiao Comparato, Sao Paulo, Brazil. Application Aug. 28, 1935. In Brazil April 26, 1935. 6 claims.

A three-dimensional projection system making use of a yellow projection light and a special copper coated screen indirectly lighted with polychromatic light.

No. 2,148,493 — MOTION PICTURE APPARATUS. Roger L. Nowland, New York, N. Y. Applica tion July 18, 1935. 8 claims.

Motion picture apparatus in which a part-width of the film is first exposed, the film is reversed and a second part-width exposed.

No. 2,148,508-METHOD AND MEANS FOR MAKING EFFECTS FOR MOTION PICTURES. John F. Seitz, Los Angeles, Calif. Application Nov. 1, 1933. 14 claims.

A method of making diffusing effects in motion pictures by moving a graduated filter in front of the lens so that the image may change from a clear image to a completely diffused gray field.

No. 2,148,756—FILM HANDLING DEVICE. Roy Edward Keys, North Hollywood, Calif., assignor to one-tenth to C. A. Miketta, Beverly Hills, Calif. Application Aug. 21, 1937. 5 claims.

A film handling device having a pair of connectable housings each having a light-tight compartment for a film reel, and means for rotating the reels from the outside.

No. 2,148,814—CAMERA, CHIEFLY FOR CINEMATO-GRAPHS. Jean Ionesco, Munich, Germany, and Georges Lucien Victor Joseph Prouvot, Roubaix, France. Application Sept. 9, 1937. In Germany Sept. 15, 1936. 8 claims.

A color motion picture camera making use of a plurality of films sensitive to different color ranges, the films being transparent and having lenses in between them.

No. 2,148,934—CINEMATOGRAPHIC CAMERA. Leo Frankel, Austria, assignor to Lampen-und Metallwaren-fabrieken R. Ditmar Gebruder Brunner A. G., Vienna, Austria. Application Nov. 7, 1935. In Austria Nov. 16, 1934. 3 claims. A speed control for a multi-speed camera having frictional brakes which apply different amounts of frictional braking effect.

No. 2,148,979—Color Photography. Walter Dieterle, Germany, assignor to Agfa Ansco Corp. Application May 27, 1937. In Germany May 29, 1936. 4 claims.

A multi-layer film for color photography which has a red-sensitive emulsion containing a colorformer for the blue-green picture and capable of forming a dye-stuff, and a yellow-green sensitive emulsion containing a color-former for the purple picture and capable of forming a dye-stuff

No. 2,148,980—Photographic Material for Color Photography. Walter Dieterle, Germany, assignor to Agfa Ansco Corp. Applica-tion July 14, 1937. In Germany July 17, 1936. 2 claims.

A film for color photography which comprises a red sensitive emulsion containing a dye-stuffformer capable of forming a blue-green picture, and a dye.

No. 2,149,217-Motion Picture Camera. Paul Heinisch, and Karl Schenke, Germany assign ors to Askania-Werke A. G. Application May 29, 1936. In Germany June 1, 1935. 4 claims. A motion picture camera having a finder in which a mirror alternately reflects light from the camera lens and the finder lens to the finder eyepieces. No. 2,149,218—MOTION PICTURE CAMERA. Paul

Heinisch and Karl Schencke, Germany. Application May 29, 1936. In Germany June 6, 1935. 6 claims.

A motion picture camera having a film gate which rocks through a small angle in synchronism with the intermittent motion.

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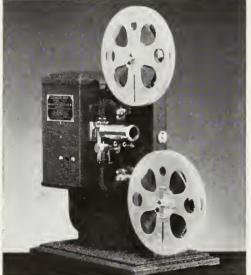
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Good for close-up shots. Used as a front light for close-ups of faces, the new Daylight Fluorescent MAZDA lamps provide a splendid glareless foundation light...particularly with the new, faster film. Cinematographers say that the way its soft, blue-white light tends to iron out wrinkles is marvelous! Have you tried it?



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This installation was designed and constructed by W.T. Strohm, Chief Engineer of 20th Century-Fox. It employs twenty-eight of the new Daylight Fluorescent MAZDA lamps...to provide glareless light, of daylight quality. Clay Campbell, Director of Make-Up for 20th Century-Fox, is shown applying make-up to Binnie Barnes, popular screen artist, for her latest picture, "WIFE, HUSBAND AND FRIEND."

GENERAL & ELECTRIC
MAZDA LAMPS

International photographer

Vol. 11

May, 1939

No. 4

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REGULAR DEPARTMENTS

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On the Cover

Proving that an off-stage shot of a camera crew at work can get away from the routine and dramatize the vital instrument itself, is this effective still, featuring the new BNC Mitchell, which is described by Sol Polito beginning on Page 7. The picture is from the camera of Schuyler Crail, stillman member of Local 659, IATSE.

ditor, Ed Gibbons; Managing Editor, Herbert Aller; Art Editor, John Corydon Hill; Business Manager, Helen Boyce.

Ontributing Editors: Lewis W. Physioc, Fred Westerberg, D. K. Allison, George Hurrell, J. N. A. Hawkins, Paul R. Cramer, William Comyns, G. M. Haines. Opyright, 1939, by Local 659, International Alliance of Theatrical Stage Employees and Moving Picture Machine Operators of the United States and Canada.

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TERNATIONAL PHOTOGRAPHER. as the monthly official publication of International Photographers, Local 659, of the International Alliance of Theatrical Stage Employees and Moving Picture Machine Operators of the United States and Canada, not only represents the entire personnel of photographers engaged in professional production of motion pictures in the United States and Canada, but also serves technicians in the studios and theatres, who are members of the International Alliance, as well as executives and creative artists of the production community and executives and engineers of the manufacturing organizations serving the motion picture industry. International Photographer assumes no responsibility for the return of unsolicited manuscripts or material.

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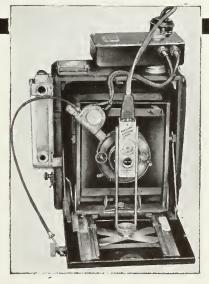
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This sparkling sharp, excellently composed still picture is from the camera of Clifton Maupin, veteran stillman member of Local 659, and was made on the set of 20th Century-Fox's "Alexander Graham Bell."

Note excellent handling of many subjects and unique angle shooting overplayers Loretta Young, Don Ameche and Spring Byington toward director Irving Cummings, cameramen Leon Shamroy and their technical creu

mation DHOTOGRAPHER

Only International Professional Journal of Motion Picture Arts & Crafts

color to GET MUCH-NEEDED REVIEW

resent situation so muddled International Photographer plans series to give complete "open forum" discussion of ommercial systems from all angles and aspects—technical, practical, theatrical—in relationship to monochrome.

TREE PRINCIPAL SUBJECTS are of prime imrtance in any technical discussion today-teleion, rear projection and color photography. levision, despite recurrent waves of "just bund the corner" fanfares, still is very much the laboratory stage, technically and artisti-Rear projection, with the many advantges it brings to the creative elements of cineatic show business, is distinctly out of the dgling stage. Excellent minimum standards ve been set up, as evidenced by the Academy port on rear projections, an installment of ich begins on Page 19 of this issue, which ould soon result in even greater technical ogress in this field. Color is a peculiar toss-. Despite the truly sensational success of

Technicolor company, working against teric odds, and the activities of scores of other ganizations and individuals engaged in this ld, it still has much of the will-o'-the-wisp haybe yes, maybe no" quality that character-

television.

The confusion and disputation that is rife on subject of motion picture color photography reminiscent of nothing so much as the Biblil Babel and it requires considerable fortitude attempt to bring any order out of this "chaos clamor.' However, as a result of a general mand for a complete presentation of the facal picture on color, coming from technicians. ecutives and many workers in color research, TERNATIONAL PHOTOGRAPHER is undertaking e publication over a period of months of an haustive and thorough analysis of the situa-

It is not our expectation that such a muded picture can be completely cleared up by mere series of articles, but it is our sincere pe that the compilation and publication of formation that is available from many sources ll aid materially in bringing the whole subct out into the open for public examination the professional technical community of the otion picture industry—something that has ng been needed, if the heartfelt and vocifers remarks of many sincere experts in the ld, with whom we have talked, carry any

The first consideration of any practical execue who considers color-whether he be creatg entertainment or commercial advertising proctions-is good consistent release prints in antity. Technicolor has a working three-color ocess that, despite several increases in ca-city, is virtually absorbed by the needs of

In Hollywood, the world center of motion picre production, the next alternative for actical production executive is bi-pack. When u say "bipack," Cinecolor immediately steps to line as second to Technicolor in importance. new modern plant, with the capacity to rn out release prints is available. And run-ng competition to Cinecolor is Consolidated lm Laboratories, Inc., with their Magnacolor, which they have been expanding and imoving their laboratory processing facilities. Also

in the bi-pack field is Telco Color Laboratories, operating at present with an experimental plant, but promising early construction of a new large

capacity laboratory in Hollywood.

There are other bi-pack color processes available, but to date none have loomed large in the field with any important productions—fea-tures or shorts! Naturally, of course, color processes are not limited to Technicolor's threecolor system with special cameras and its imbibition prints, and the secondary bi-pack systems. Color is all over the place, with various systems and combinations of systems. There are the many additive devices, still bucking the problem of needed accessories to the projector, and the many processes of the more favored subtractive method.

There are the monopack triple-emulsion films like Kodachrome and Agfacolor. There are the lenticular processes like Dufay and Keller-Dorian. There are various methods of swelling and special filters on the film, such as Telco. There are combinations of bi-pack flotation and imbibition. There are systems for printing one color, then printing another over without fixation in between. There are many obscure and theoretically interesting systems, and the patents on dye combinations in the original negativesnot to mention the positives-are reaching a bewildering total. Latest system announced calls for the use of sheep's blood in the negative as a color-dye recipient.

However, out of this welter of systems, theories, special cameras, filters, dye-couplers, processing systems and the like there are available for consideration from a practical standpoint a number of color systems. These, listed in alpha-

betical order are:

A Frank Statement

The editors of International Photographer are forced by circumstances to make a frank statement to our readers and to call upon them for aid and suggestions. Briefly, the situation is this: during the past few years the magazine has made such progress that we find ourselves getting in our own way. Three factors contribute to this situation.

First, we have available for publication much more interesting material than

can be presented in the magazine's present size;

Second, there has been a gradual change in the magazine's circulation, with a marked increase in net paid circulation, plus a trend toward a professional type of reader and away from the out-and-out amateur, whether in still photography or motion picture photography;

Third, there has been an increase in advertising by important firms catering

to professional interests.

Under the circumstances, editorial space in International Photographer is at premium. Were International Photographer privately operated for profit, the obvious answer would be to make a further capital investment in a larger magazine, with more pages to absorb the many interesting stories, articles and pictorial layouts that are available.

However, International Photographer is operated under prescribed long range program as a medium for the exchange of worthwhile technical information be-tween members of Local 659, IATSE, and by extension, all other serious crafts-men engaged in the photographic or allied arts and crafts, upon a strictly nonpolitical basis, and with concern only for the sincere and honest reporting and exchange of ideas that will contribute to the advancement of these arts and crafts

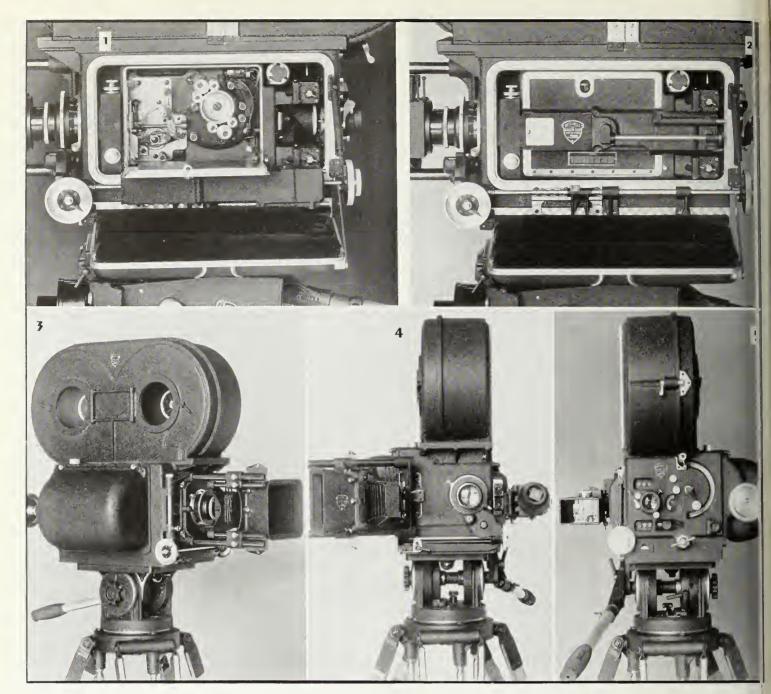
and the information of the workers therein.

Under the circumstances we are forced to call upon our readers for their suggestions as to what type of material they desire retained in the magazine and what type they desire eliminated. It is our belief that the only lasting and worthwhile editorial policy for any publication—from the standpoint of the subscriber or the advertiser—is one that places primary emphasis upon READER INTEREST. Any suggestions that will contribute to increased reader interest will be sincerely appreciated and carefully regarded.

Pending the conclusion of negotiations for additional advertising revenue. which we hope will permit a reasonable expansion of International Photographer's constructive service to the professional photographers of the motion picture industry and the allied arts and crafts in that field, we urgently solicit suggestions and criticisms from our paying subscribers and advertisers as to how we may better serve them in presenting a monthly publication that will most fittingly live up to its designation as the "Only International Professional Journal of Motion Picture Arts and Crafts.

In other words, let the editors of International Photographer know what you want and what you don't want and don't hesitate to speak frankly and to the point.

We'll appreciate it and try to be guided by your suggestions.



The BNC Mitchell camera in pictorial review. 1) Left-hand side with outer and inner doors open, showing movement; 2) Left-hand side, outer door open, inner closed; 3) Right-hand side of the camera, showing interchangeable motor mount, made as side cover of case; 4) Front view, with

matte-box swung aside; 5) Rear view, showing how all operations, cluding shutter control, dissolve, focusing shift, magnifiers and monote glasses all are operated from outside of case, as described in accompa ing story by Sol Polito.

color.

Agfacolor, Cinecolor, Cosmocolor, Cinechrome, Dufaycolor, Dunning, Duplex, Jackman, Kodachrome, Keller-Dorian, Magnacolor, Mooreprocess, Telco and Technicolor. The total is 14 names. But that doesn't mean 14 systems. can be more or less, according to the viewpoint. Kodachrome, Eastman's color that has made a big hit with amateurs, is involved in a cross-licensing deal with Technicolor. from the laboratory angle, Cinecolor and Magnacolor turn out the release prints from a number of photographic systems in the bi-pack field.

Nevertheless, these are the names to conjure within in the color field today in Hollywood and it is our intention to examine these systems, to present the factual story and to afford all these concerns and any additional competitive organizations in the field a full and complete opportunity to present their story to the technical forum of the industry. If we have unintentionally omitted any color system offering release print service from this list, we hereby sincerely extend a broad invitation of the columns of International Photographer that they join in this "open forum" discussion of color.

Color has many phases and facets. Among these are:

The camera, special or standard, or with accessories;

Lenses and filters:

Negative emulsions and their special requirements and costs;

Positive emulsions and their special requirements and costs;

Laboratory processing methods and their sim-

plicity and costs; Projection of the color prints, and its relationship to established standards for black-andwhite:

Quality of color, from the standpoints of pure physics, of showmanship, etc., in relationship to natural color as observed by the eye;

Tiring effect of color photography upon the average human in comparison with black-and-

Production cost for color photography exclusive of color itself, i. e., added costs to normal black-and-white production resulting from use of color;

Color cost over black-and-white for negative, positive and laboratory processing, release print durability, etc.;

Makeup of special nature required-both terior and exterior-and its effect upon proc tion costs, normal acting conditions, etc.;

Lighting, its demands, both exterior and terior, in relationship to production costs a photographic quality;

Keeping quality of prints and their color val in relationship to normal distribution conditi-

in theatrical black-and-white productions. It is the admitted ideal of practical commicial motion picture color to bring all of above-cited factors within as close as possi approximation of the conditions now obser in normal production and distribution of motion picture industry and the advertising a

educational fields. How close is any organition in the color field to attaining these sults? What bearing will such technical prress have upon the show business aspect the motion picture industry? And in sim but factual verbiage just what have each of organizations engaged in color work acco plished to date along these lines? These the questions we hope will be answered this International Photographer series

HE BNC MITCHELL SILENT CAMERA

ithout fanfare or ballyhoo, Mitchell organization has developed the long sought objective of the industry in a notographic instrument, a truly silent camera with the practical operative features of pre-Vitaphone days.

By SOL POLITO

In the past ten or eleven years, big topic of ccussion among cameramen has been the questin of how long the industry would have to vit before someone invented a really silent cnera. Everyone has agreed that when such a cnera appeared, it would create a tremendous sistion. Quite a number of cameramen are sl waiting expectantly for this sensation, and ranwhile pricking up their ears at every rumor fm overseas that this studio or that is using asilent, blimpless camera, and wondering why llywood doesn't import some.

What makes this situation amusing is the fact the for over four years such a noiseless, blimples camera has existed. Over a score of them in active service today. My own studio, the Brothers'-First National, operates ten of tem. Several other major plants have others idaily service. Still others are making pictus in European studios, where they undoubtely gave rise to some of those rumors about those miraculous blimpless cameras. But it is Europe—not Hollywood—that is doing the imputed!

Since, for nearly twenty years, when we have tought of Hollywood-made cameras, we have tought of Mitchells, it is not surprising that the silent cameras should bear the Mitchell tde-mark. What is really surprising is the yethey have evolved, logically and without fifare, from the same basic design nearly all dus used long before sound arrived.

c us used long before sound arrived.
So before we start discussing this present sent Mitchell, let's glance back at the way it

The first Mitchell appeared in 1921. Viewed sictly as a mechanism for moving film steadily hind a lens and shutter, it was a good camera; It there were several other good cameras alondy available. What put the Mitchell over us an assortment of practical refinements which rede it a more convenient, faster-working procetion tool.

One of the major inconveniences of cinematraphy has been focusing. In most of the ely cameras, you focused through a low-powded optical system, using a frame of the film islf as your translucent focusing screen. In she, if you didn't like the poor illumination eld definition of such a focusing screen, you cened the camera—fogging a foot or so of pund film or glass into the aperture, reclosed ty camera, and focused. In others, you could fus on a ground glass through a generally ironvenient system of prisms and a cumbersome list over the ground glass and then moving the camera sideways to offset parallax.

In the 1921 Mitchell, you simply turned a divenient handle which slid the camera-box sewise and brought a ground glass with a twerful magnifying system (which incidentally inverted your image so it was right-side-up ad correct as to right and lcft) into place hind the lens, accurately aligned and in the intical plane of focus as the film. This simpled things so you could be shooting within asecond or two after focusing or you could whin a matter of seconds make a last-minute eck of focus even after the director called

in addition, there was a large revolving disc i which eight gelatin filters, or any special ttes could be placed, and brought into placejt in front of the film—immediately. and as (ickly removed. In addition, a set of four-way

First of Series

Accompanying interesting description of the manipulation and technical operative phases of the Mitchell BNC camera, is the first of a series of such articles on modern professional cameras. Other outstanding instruments, manufactured under the well-known labels of DeVry, Bell & Howell, Wall, Duplex, DeBrie, in the 35 mm field, and 16 mm cameras that meet professional usage requirements will be described in this series. Also watch for a description of the engineering job Art Reeves is completing in remodelling a Bell & Howell to be available for bi-pack color work to the Hollywood production community.

mattes were built right into the camera, operated by convenient, outside control-knobs, while an internal iris was also supplied, built into the camera so that it could be decentered to close on any portion of the frame desired. Even the tripod was an improved, quick-acting design, with legs which could be adjusted with one hand, instead of with the conventional four bulky wing-nut locks.

Those were the days when every first cameraman of any standing owned and maintained his own camera outfit. Long before sound came in, the bulk of Hollywood's production was filmed by these more convenient Mitchells.

With synchronized sound the first thing that had to be done was in some way to insulate the noise of the camera from the microphone. Up to this time, no one gave a thought to cameranoise.

But when sound was to be recorded, its purr of precision machinery suddenly became louder than the roar of a battery of army tanks. Since they couldn't put the mike in an absolute acoustic pen, the sound experts compromised by enclosing the camera—and its operators—in sound-proof housings that were quickly nicknamed "ice-boxes," though they were anything but frigid inside. Those camera booths were sound-proof all right, but they were also heat-tight and practically air-tight—and some of those early talkie scenes used to run a full recl at a take! It was a period when few cameramen indulged in Turkish baths after a day's work!

At this time, however, some observant soul discovered that the special high-speed movement made by Mitchell for slow-motion camerawork was also a lot quieter than the standard movement. It was operated with cams, and moved the film with four pull-down fingers and registered it on a pair of pilot-pins. There was an abrupt demand for speed movement-equipped Mitchells.

About the same time the Mitchell engineers performed a major operation on the camera, amputating the ball bearings which had originally been used to make the camera easily handcranked. Now that all production cameras had to be motor-driven, the heavier load caused by the closer fit of sleeve-type bearings was no longer important. The quieter operation of these bearings was vital. In addition, it was learned that when two metal gears meshed with each other—even if they were the most precisely-cut gears obtainable—they made some noise. Metal gears operating with gears cut from synthetic plastics, like celoron or bakelite, however, were

much quieter. Half the metal gears came out, to be replaced by plastic ones.

All of these changes took a lot of the noise out of cameras, so much, in fact, that the elaborate sound-absorbing insulation of the booths was no longer necessary. Therefore the present, far smaller sound-proof housings, dubbed "bungalows" or "blimps" were possible. These enclosed the camera only, and left the operators out where they could both see what they were photographing, and get their share of whatever fresh air might be available on the stage.

But this still left the photographer at some pretty severe disadvantages. For one thing, since his camera had to be completely enclosed in its blimp, he had to photograph through a glass porthole. Even the finest optical glass flats are enough to cut down both illumination and, most important, optical quality.

Next, he had to take his choice of two evils as regards the finder. If it was mounted conveniently outside the blimp, the problem of finder-parallax—especially on follow-focus and dolly shots—was tremendous, for finder and lens might be almost a foot apart. If the finder was mounted in its normal position, close to the lens, it had to be inside the blimp, where it was difficult to follow.

And when it came to focusing—well, what use was the popular Mitchell throw-over focusing system if before you got in to operate it you had to unbutton three or four latches and propopen two or three blimp doors?

Another unpleasant thought was that if your film buckled—as it sometimes does in even the best of cameras—your camera, locked inside the blimp and driven by a powerful motor, could easily tear itself to pieces before the crew could do anything about it, or even know anything was wrong.

This last was the first to be remedied. A simple little trip was placed inside the camerahead, in such a position that at the first pressure of buckled film, the motor-switch was thrown out and the camera stopped.

Things went on with such compromises until 1932. Then the Mitchell engineers brought out the so-called "NC" or sound model. The initials denote the fact that this is one of two models designed together. One, on paper, seemed a likely studio model; the other, also on paper, looked like a good, simplified news camera. But when the latter was actually built up, it proved to be such a great advance in camera-silence that the studios appropriated it.

This machine looks outwards typically Mitchell. The motor-mounts are made interchangeable with the right-hand cover-plate of the box, so it is a simple matter to change from 48 to 60 cycle synchronous motors to DC interlock motors, "wild" motors, high-speed motors or anything else as the scene demands.

The shutter-aperture is adjustable from the rear of the camera, and the adjustment is fitted with a positive lock. For convenience in syncing process shots a monitoring miniature shutter disc is also placed at the back of the case.

But the real improvements are inside the camera. The mechanism has been simplified to the utmost, in the interests of silence. There are only two pairs of gears in the entire camera; the motor drives the movement directly. This, in turn, drives the shutter-shaft through a pair of precision helical gears. A silent worm gear on the shutter shaft drives the main sprocket and the take-up belt.

The movement is operated by eccentrics rather than by the usual gears and cams. The pull-

down arm is fitted with four fingers—two on each side—and these fingers and the pilot-pins overlap, one entering before the other slips out of the perforation. All of this gives a quiet, accurately registering movement.

The camera is partly acoustically insulated with a layer of sound-absorbing material between the inner and outer walls. The magazines are also insulated, and they are further insulated from direct contact with the camera-box, which in turn is insulated from the tripod-head.

All told, this design has produced a camera which can under many conditions be used unblimped, or with only a quilted fabric "Barney" for most shots, though it requires a blimp for closer work. It is deservedly popular, and by now there about 150 "NC's" in use in major studios in Hollywood and all over the world.

However, this camera, excellent as it is, still fell below the ideal Mitchell engineers had set for themselves. So there followed a further period of technical reesarch and—equally important—careful observation of what the studio cameraman wanted in a de luxe studio camera. Finally in 1934—yes, it came as far back as that!—appeared the Studio Model, officially termed the Mitchell "BNC."

This consists basically of the NC mechanism enclosed in its own, integral sound-proof housing, and with every possible feature for convenient operation.

The camera itself is built into a compact soundproof housing—one that is too small to be called a blimp, and one, too, which is a permanent part of the camera. But with the single exception of loading, everything connected with the camera's operation can be done without having to open this housing!

The single lens is mounted on the front of the outer case and there is no more shooting through glass windows! The mount is of the bayonet type, quickly detachable but positive in its action. The lens can only be put on the one correct way. A single locking lever at one corner swings the focus-operating gears free of the lens for lens-changes.

The focusing mechanism is substantially the same as that used by Mitchell for twenty years. Inside the outer case, the camera-box containing the camera mechanism, shifts sideways at a turn of a familiar-looking external handle, and brings the ground glass and magnifying system into place in the usual way; the focusing eyepiece is at the rear of the outer case. The controls which give either 5X or 10X magnification are also placed outside, close to the eyepiece. Nearby are buttons which lift either a panchromatic or a blue monotone filter into this optical system.

The lens itself may be manipulated from any one of three controls. Two are at the front of the camera, on the right and left sides, respectively, and by means of concentric knobs give either a coarse or a fine movement. The third, a fine movement only, is at the left-hand rear corner, close to the eyepiece.

The finder, which is almost as close to the lens as in pre-Vitaphone Mitchells, is automatically focused and corrected for parallax by an ingenious system of cams. A set of cams, individually matched to the lenses used on the camera, is fitted under the finder. The cams not in use remain in this position, out of the way; the one for the lens in use, and those for lenses of any shorter focal length, are swung over to bear on a roller which moves on a helix fitted to the rear focus-operating control. The built-in cams match the common range of lenses from 35 mm to 6-inch; the less frequently used 24 mm lens calls for a special, separate cam which is put in place only when needed.

The finder itself swings out of the way automatically with the opening of the outer door when, as in reloading or checking the movement, it is necessary to open the outer or inner case doors. Closing the door returns the finder to its original setting.

The adjustable shutter is retained, and its

SMPE Hollywood Meet

Auother successful semi-annual convention of the Society of Motion Picture Engineers was recorded in Hollywood last month with a five-day presentation of papers on a host of subjects, an exhibit of latest color stills in various mediums, visits to the Paramount and Warners studios by the delegates from the East, and concluding with an interesting evening devoted to latest television developments.

Like the Academy of Motion Pictures Arts & Sciences, the SMPE has set up a permanent committee on television, and the organization's plans for detailed study and reports on this potential new entertainment giant were outlined in detail in a paper by Dr. A. N. Goldsmith, chairman of the committee.

The editors of International Photographer regret that lack of space causes us to temporarily suspend our practice of publishing complete abstracts of the papers presented. However, the convention program, with list of papers and their authors, appeared iu our April issue and we suggest that any of our international readers, who have been in the practice of following these abstracts as a guide to their individual interest in the complete text of certain papers, communicate with Sylvan Harris, editor of the SMPE Journal for information as to the Journal issue in which such complete texts will appear.

Most practically impressive aspect of the television session was the information on solving the problems of television projection of motion picture film and we plan to present technical information on this subject in an early issue.

controls carried to the outside of the housing, while the monitoring miniature shutter is always visible through a small glazed window. But in addition, by popular demand, the shutter of the BNC is of the dissolving type. The dissolve may be made manually, from the outside of the case or, by using a button, a fourfoot fade in or out may be made automatically.

The frame and footage counters have naturally been mounted so as to be visible from the outside. In the earlier models, one of these was a dial type, counting only footage; the other a Veeder-type, with a frame-counting disc as well as one counting footage. In this model, both are of the Veeder-type, and located just above and below the focusing eyepiece. One of these may, as usual, indicate magazine footage; the other, scene footage.

The regular Mitchelf internal four-way mattes are retained in the BNC, and their controls placed in the usual positions on the inner case. A convenient filter-slide is provided. The mattebox is of the usual type, mounted, of course, on the outer case, but with its supporting arms at the side, rather than the bottom. This assembly swings sideways out of the way for lenschanging and the like. A single rod holds it in place and permits quick removal. A special, supplementary sunshade is provided for use with 24 mm lenses.

The motor housing is substantially the same as that used on the NC type, consisting of a

complete door-plate combined with the mousing. The internal wiring is such that volume a new motor is put on no wiring changes enceessary; a single standard connector control, the motor to the power-line, which comes through the right side of the outer case, usual Mitchell anti-buckle trip is provided, do the re-set and manual trip carried to the organise. A large knob, in the center of whice a crank fitting, enables the assistant to the motor manually for loading, or to have must be pressed inward to contact its or site member extending from the inner case. In the motor manual from the inner case is also fully insulated for direct contact with the bottom of the organism, yet is mounted in such a way that is held rigidly in place.

Access to the inner camera is through doors; one on the left side of the outer colike the usual camera door; the other opens the entire left rear quarter of the outer magnethousing, giving ample room for reload. Several convenient folding handles are supplified in the supplified of the supplified in the supplified of the supplified in the supplified of the supplified of the supplified in the supplified of the supplies of the supplified of the supplies of the suppl

Now, what does all this mean in terms practical camerawork?

Well, no one has ever accused Warner Broth, executives of spending money foolishly; a within the past few months Camera Departm Head Mike McGreal has just completed a pgram of replacing the studio's first-string came (all relatively young Mitchells) with ten of the well-brother mew BNC's—a \$100,000 investment in more excient camerawork!

All of us at the studio have completed s' eral productions apiece using the new camer and we're pretty well agreed that they are practical advantage.

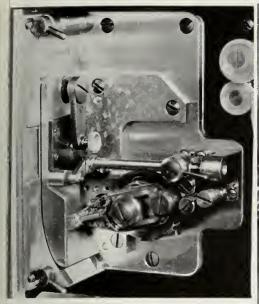
First, like the original Mitchell of twer years ago, they are faster operating. You c go through a whole day's work without exhaving to open the outer case except for loading. You can indulge in those last-secon checks through the ground glass just as you do before sound came. The operative crews first follow-focus and dolly shots a world easier with the parallax-correcting finder and the handifocusing methods.

On exterior scenes, where now-a-days we frequently have to pan or dolly from dire sunlight to heavy shadow and back again, being able to adjust the shutter from outside the case, during the shot, is a real life-saver. It paying triple dividends in smoother photograph easier camera work and simpler laboratory wor Of course, this is just one of the many poin where we are at a disadvantage using convextional blimped cameras, and where only this ne Mitchell will help us out.

The lighter, smaller camera also gives us bac most of the mobility we enjoyed in pre-micr phone days. The absence of the objectionabl glass porthole gives us better photographi quality.

In addition, our soundmen have had som nice things to say about the noise-free operatio of the BNC. The more critical ones point outhat if you are on a bare stage, with no peoplor anything else to create background noise and if you then bring the microphone to within a matter of inches of the lens, you can pictup a tiny trace of noise; but even they admit this imperceptible sound is in a frequency range which is automatically filtered out by the regular dialogue equalizers.

So, for all practical purposes we now haw a camera as flexible as the best pre-Vitaphone outfits, which is yet so quiet no soundman car point a finger at it. And it crept up on us while we were busy wondering when we'd hea about a really silent camera!

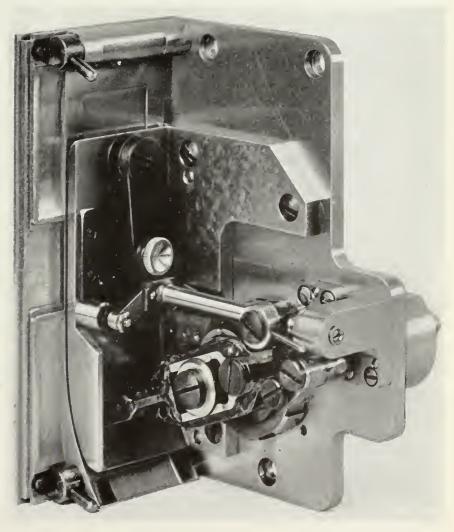


ol Polito, whose interesting and detailed acount of the Mitchell camera developments to he present versatile and quiet BNC model, lears up much idle gabble on the silent camera ituation, is shown at right, with elbow on knee, hooting "DuBarry" for WB in 1934 with blimped amera used at that time. Above is the detailed iew of the silenced movement of the Mitchell, attroduced in 1933, and described in the acompanying story.





Illustrations on this page are from International Photographer's valuable file of engravings on technical matters, one of the most complete and authoritative in existence, representing an original investment over \$20,000. At right is close-up of the eccentric register pin intermittent movement introduced by Mitchell in 1931; and above is a rear view of the 1921 Mitchell, described herewith, showing synchronous motor in sound-proof case and focus controls at left of base.















"MAN of CONQUEST"...

Republic, under the leadership of Herbert Yates is engaged in an aggressive drive to boost the calibre of its product that is resulting in a flow of considerably more expensive productions from

the Valley lot. Herewith are stills from the collection photographed by Milt Gold, stillman member of Local 659, IATSE, for Republic's spectacular historical epic of early Texas, "Man of Conquest," starring Richard Dix. Typical of the variety of photographics.













...stills by milt gold

raphic effects called for in providing exploitation pictures for a plorful historical action yarn, Gold's stills run from beautiful atteriors and smashing action scenes to portrait close-ups and effective depiction of dramatic action highlights. Next month in

International Photographer, another layout of outstanding pictures from a stillman's assignment, Wally Wallace's shots for Edward Small's production of "The Man in the Iron Mask."

fundamental photographic physics

Third installment of reference material on photographic physics in convenient and handy form for filing, free Chapter II of new volume, "Basic Photography," by Don Hooper, frequent contributor to *International Photograph*.

By DON HOOPER

This is the third and final installment of International Photographics's republication of Chapter II on Fundamental Photographic Physics, from Don Hooper's new book, "Basic Photography." The numerals in parentheses in the following text refer to the page numbers on which the material appears in the original edition of "Basic Photography."—ED. (24)

ANGLE OF VIEW

The angle of view is the angle included between lines drawn from the lens to opposite sides of the film used. It is governed entirely by the size of the film used, and its position in the focal plane with regard to the axis of the lens. It is always smaller than the angle subtended by the diameter of the lens field, although it may approach it quite closely.

Figure 17 illustrates field and angle of view,

Figure 17 illustrates held and angle of view, and in Figure 18 is given a method for ascertaining the angle of view from the focal length of various lenses and films of different sizes.

This diagram shows the angle of view which is included on films from $3\frac{1}{4}x4\frac{1}{4}$ inches to 11x14 inches, using lenses of focal lengths from 3 to 15 inches.

Its use is as follows: On the first horizontal line under the arc, locate the figure that corresponds with one of the dimensions of the film being used. On either of the outside vertical lines, find the figure corresponding with the focal length of the lens being used. Follow the horizontal line from this figure until it crosses the vertical line from the dimension figure at the top. There the angle of view for these dimensions is expressed in degrees.

Example: What angle of view will be included on a 4x5 inch film, using a six-inch focal length lens? On the upper horizontal line, find the figure four and follow the vertical line leading down from it until this line intersects the horizontal line numbered six. At the point of intersection, follow the angular line to the arc, and the angle included is seen to be 36 degrees. By the same method, it will be found that the angle included on the five-inch ways of the film is 45 degrees.

With miniature cameras using the 35 mm mo-

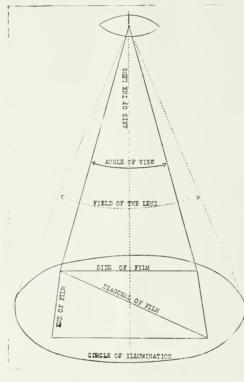
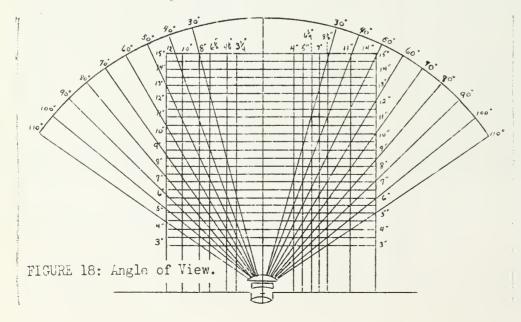


FIGURE 17: Field of a lens, angle of view, and illumination in a plate.

tion picture film, the Angle of View is as follows:

101101								
(26)								
	26	$_{ m mm}$	Focal	Length			81°	
	35	$_{\mathrm{mn}}$	44	66			65°	
	50	mm	66	66			48°	
		$_{\mathrm{mm}}$	66	6.0			34°	
		$_{\mathrm{mm}}$	6.6	**			27°	
		$_{\mathrm{mm}}$					$24\degree$	
		$\mathbf{m}\mathbf{m}$	66	**			19°	
2	009	mm	4.6	4.6			12°	



CLASSIFICATION OF LENSES

Lenses are often classified according to tl_f focal lengths and angles of view.

A lens that will, at its widest aperture, fir cover a film whose diagonal is greater than focal length of this lens, is called a WI; ANGLE LENS. The angle of view for stalleds will vary from about 60 degrees to proximately 135 degrees. If the focal length; equal to or slightly greater than the diagonal the film the lens is called a normal or media. the film, the lens is called a normal or mediangle lens, and covers an angle of from 45 60 degrees. If the focal length is greater the this diagonal, it is a NARROW ANGLE LE with an angle of view of less than 45 degree In all cases where the angle of view is used describe a lens, the size is measured from largest plate that can be used with that le There is a tendency to regard a lens of sh focal length as covering a narrow angle. T is often the case, but not an absolute requi ment. If, due to its construction, a short fo length lens can cover sharply only a small fi it may have a very narrow angle of view, wh a lens of comparatively long focal length may so accurately designed and constructed that will have a wider angle of view than the shor focal length lens.

COVERING POWER

The ability of a lens to cover a wide any of view in proportion to the size of its fice is a measure of its covering power. For a ample, a lens may form a sharp image to t margins of a 4x5 inch film, but when used w a 5x7 inch film, the image would not be shart to the margins. We would then say that to the margins. We would not asy that the lens film. Some lenses are marked 4x5, 5. 8x10, etc., and the question arises, why a le marked 5x7 would not also cover a 7x7 fil The limiting factor in any film size is the leng of its diagonal. So long as its diagonal is let than the diameter of the lens field, it may used.

PERSPECTIVE

This is the art of representing solid bodies a plane surface. It is divided into two branche Linear Perspective, which shows the appare form, sizes and distances of objects on a f surface; and Aerial Perspective, which distiguishes the distance of objects by their relatibrilliancy and color. It is with Linear Pespective that we are interested in the study lenses. In viewing objects of the same size with enaked eye, those nearby, naturally, appellarger than those at a greater distance. If the objects, when photographed, appear of the sat relative size and shape as when viewed by the naked eye, we may say that this photograph hathral perspective. However, if they appear have different relative sizes and shapes, we state the photograph has poor, or exaggerate perspective. The normal unaided human eforms images corresponding to those given a lens of about 14 inches focal length on a 8x10 film, or if using the miniature camera, 75 mm lens on 35 mm film. Objects photograph (677)

with either of these lenses would appear vemuch the same as when viewed by the eye. However, lenses of this focal length are seldom use for ordinary photographic work, shorter ones by ing the rule. Therefore, we would expect a ordinary photographs to exhibit exaggerated perceive, and such is the case. Fortunately, the exaggeration is not apparent to a great extent aphotographs with lenses of ordinary focal length

at with extreme wide angle leases, greatly exgerated results may be produced.

It is often necessary to sacrifice perspective r a greater angle, especially in interior, landape and news photography. For a subject in hich all objects to be recorded are either at considerable distance from the camera or lie ose to a plane at right angles to the axis of e lens, a wide angle lens will give satisfactory sults. But in a subject having considerable sults. But in a subject having considerable lepth" such as a landscape with foreground, a furnished interior, a long focus lens will ually give a more pleasing photograph.

We have just said that wide angle lenses exgerate or distort perspective. Telephoto lenses so exaggerate and distort perspective, but in e opposite dimension. Telephoto lenses con-nse or telescope objects by photographing them that they appear much closer together than ey actually are. Therefore, when true per-ective is desired of objects, a great distance om the lens, an extreme long focus lens should used instead of the conventional telephoto. hese lenses are very bulky and also quite exensive, but besides giving a more true perspec-ve, they have the faculty of producing much etter definition. An illustration of the praccability of the long focus lens versus the telehoto could be when shooting motion pictures a football game, for the coaches to observe ne errors of the players. With a telephoto ns, it might look as though a tackler were close to the man carrying the ball and ould easily have tackled him. A long focus ens would have given true perspective and nown that his position was such that it was ctually impossible to make the tackle. CARE OF LENSES

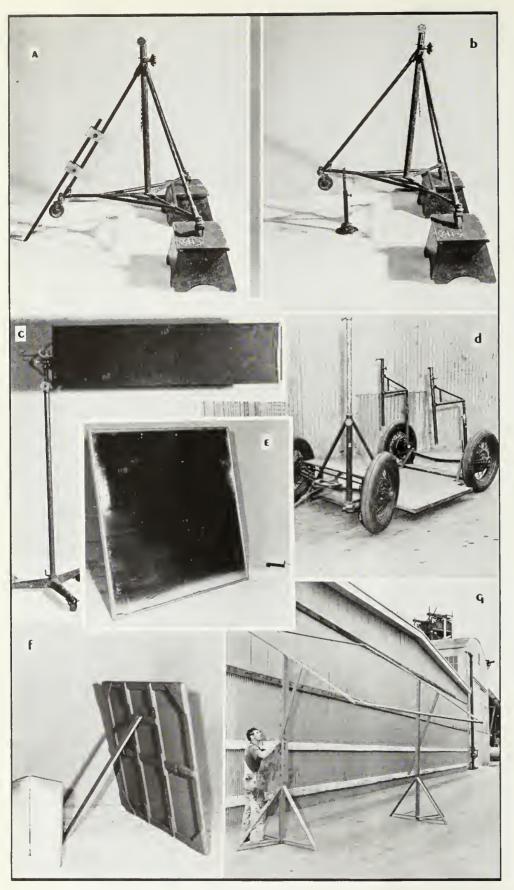
The lens is usually the most expensive article photographic equipment and one of the most nportant. For this reason, lenses should be eated with consideration and handled carefully. ractically the only way to damage a lens is y careless handling, or improper storage. he photographer treats his lenses as he does is own high-grade watch and follows the simle instructions for their care given below, they ill remain in perfect condition indefinitely.

Cleaning: One of the signs of a good lens is nat the surfaces of the glass appear black when eld against a dark object. If the surfaces ave a grayish color when so viewed, it is a ign that the original high polish has been reloved, either by scratches or by the formation f a grayish oxide on the surfaces. Also the anada Balsam used in cementing the elements ogether may darken, turn yelow, or in some ases, appear to be disintegrated. Also, all nses, sooner or later, acquire finger marks. rease spots and dust particles on the surfaces f the elements. These, as well as the faults reviously mentioned, tend to cause loss of deail and brilliancy in the negatives and decreases ne speed of the lens. Since it is very easy damage a lens by improper methods of clean ng, the following procedure should be carried ut: The lens surfaces should first be dusted ith a clean handkerchief, or camels hair brush, remove dust particles which might easily ause scratches in polishing the surfaces. It is sually sufficient to breathe on the glass suraces and polish with a rotary motion using a LEAN, unstarched handkerchief. LENS PAPER s excellent for this operation, and should be sed when available. After polishing the outer urfaces, by looking through the lens, the need

f cleaning the inner surfaces can be ascer-ained. If this is necessary, the cells should be unscrewed from the barrel, the inner suraces cleaned and polished, and the cells replaced one at a time. Care should be taken ot to use force in unscrewing the cells if the hreads are jammed. In that case, allow some erson experienced in such matters to loosen he threads, NEVER hammer the lens barrel r cell containers to loosen the threads. Also, are must be taken not to crossthread when replacing the cells, or to tighten the threads more han is necessary to prevent unscrewing due to ihration or similar causes.

Caution: It is quite possible to cause fine cratches on the glass surfaces by vigorous or





prolonged polishing, or by using too coarse a material.

Repairs to Lenses: The only deteriorations, due to age, to which lenses are subject, would be the formation of a grayish oxide on the surfaces, which in some cases cannot be removed by polishing, and the darkening, yellowing, or disintegration of the Canada Balsam. Other reasons for having a lens repaired would be scratches on the surface, damage to the diaphragm, lens

barrel, or cell retainers. When a lens exhibits any of the above defects to the extent of impairing its optical qualities, it should be shipped to the manufacturer for repairing.

Air Bubbles: So long as they do not occur at the surfaces, have no detrimental effect on the action of a lens. In fact, old-time photographers used to judge the quality of a lens by how few air bubbles it contained. With the superior optical glass now obtainable, air

bubbles are smaller and fewer, although f lenses are absolutely free of them.

Storage and Handling: Lenses should not stored near steam pipes, radiators or other cessively warm places. Neither should they exposed to acid or chemical fumes, salt wa spray, steam dampness, nor to the direct reaction of the sun. Also, the lens used in the came should not be used in the enlarger as the plonged passage of the light rays from the clarger light through the lens will cause a daening or yellowing of the Canada Balsam, stored, they should be kept in suitable of tainers free from dust and rough handlin LENS CAPS are always provided by the man facturer for the front element and should alway be in place except when the lens is actual being used. This applies especially to lar lenses, which also should be provided with cap for the rear element.

Care of the Diaphragm: This and the shiter are the only mechanical parts with whisome lenses are fitted. The diaphragm leaw which are of very thin metal or somewhat thic er fiber, are extremely delicate. They shou never be touched with the fingers, as so doin is likely to bend them, or leave perspirationarks, which will cause corrosion. Very fe diaphragms fail unless they have been tamper with. If a diaphragm works freely, leave alone. If too stiff in its action for convenie operation, allow some one experienced in operation, allow some one experienced in calculation of failure of the diaphragm, either have the repairs made by some competent instrument materials of the lens back to the factory.

Care of the Shutter: All shutters, except tho on the Box Brownies and less expensive Kodak are of very intricate mechanical arrangement and adjustment. They, also, should be place in the hands of an experienced repairman a sent to the factory if in need of repair.

It is a seemingly natural tendency for beginning photographers to blame lenses which they have not previously used, for failures which invariably can be traced to other causes, usual personal. Most lenses, if properly used, with produce the desired results.

GRIP EQUIPMENT

Practical gadgets to expedite production from array at MGM grip department, headed by George Hyde.

By GEORGE M. HAINES

IF ANY READERS who have been following our recent presentation in International Photoc Rapher of the many effective and importan accessories, gadgets, gimmicks, et al., that ar used in the studios to further the most efficien and entertaining photography of dramatic action think we are nearing the end of our material we want to here and now disabuse them of the idea. The further we dig into the subject of specially concocted devices the more we marve at the patience, skill and inventive ability will which scores of unsung and unpublicized studic craftsmen have solved and are solving the many angles of making the ideas of producers, writers directors and other creators workable on the set

It is one thing to vision an effective scene or sequence, another to get that dramatic idea "in the can" with a minimum of fuss and bother. Give the lowly crafts workers a lo of credit for that, even though it only appears on the screen under the broad credit of the IATSE label you see in the corner of every picture's main title. The handy articles and devices developed by the studio crafts seem in

merable. A few visits to the MGM lot last both produced an array of items for our coltion and they are herewith presented, ably totographed by Eric Carpenter, stillman memle of Local 659, IATSE.

The MGM grip equipment illustrated, as did Paramount lot items, last month, demonsates the benefit the individual studios can get m paying attention to the constructive work their fellow workers on other lots.

MGM's efficiently working department is under direction of Clarence Hyde, superintendent the grip department, who has been with the organization for 20 years. Don Duffield, in carge of the grip room, has been with the sidio for eight years. They and their covrkers on the lot can well be proud of many sful and clever contributions to the practical dof film production.

MGM equipment, illustrated on Pages 14-15 of is issue of International Photographer, inides:

ON PAGE 14:

(A) Light base extension for use on stairs uneven surfaces, consisting of a long rod ld to leg of two wooden clamps with wing ts.

(B) Stairway jack for a lamp, consisting of pipe flange, fitted with 3/1" pipe with thumbrew, enclosing 1/2" split pipe, and with split drive nails in screw holes.

(C) Stage overhead flag, 12' extension, conting of Jumbo century stand with MGM feare of weight opposite flag extension (note the byable leads at base) and featuring handwered gears for extending flag; just visible extended end of flag is the inside extension g, which operates on a duralumin slide very nveniently.

(D) Standard MGM studio perambulator, conting of: chassis, featuring tires with tread eled off except for ½" at center to reduce und; swing arms for lights, at rear, and in out a Jumbo century stand.

(E) A 4' lead reflector using two solid lead eets; with an MGM tie-down alongside at 2ht; latter consists of 1/4" stock bent at right gle with two nail holes, and with top bent "U" shape at lamp-base height.

(F) Collapsible 2' square reflector and a ar view of the 4' square lead reflector seen (E).

(G) Exterior adjustable scrim frame. Shown the the device is Don Duffield, eight years th MGM, and now in charge of the grip om.

ON PAGE 15:

(A) Baby spot hangar with lamp attached d plugged in. Consists of "U" hook, solidly stened to 1"x1" rods, which are fitted with umb-screw adjustment setup for elasticity in

(B) Sliding Gobo, 3'x9', consisting of two obos on an "A" frame and leg. Slides up by dley in ply-wood overlap side. This extending obo also can be easily swung to various angles means of a swivel attachment to the "A" ame, which Don Duffield is seen holding in e illustration.

(C) Easel reflector stand of very sturdy contuction, consisting of legs, elevation rod and tension chains, tie-off screw knob and worm ar for adjusting.

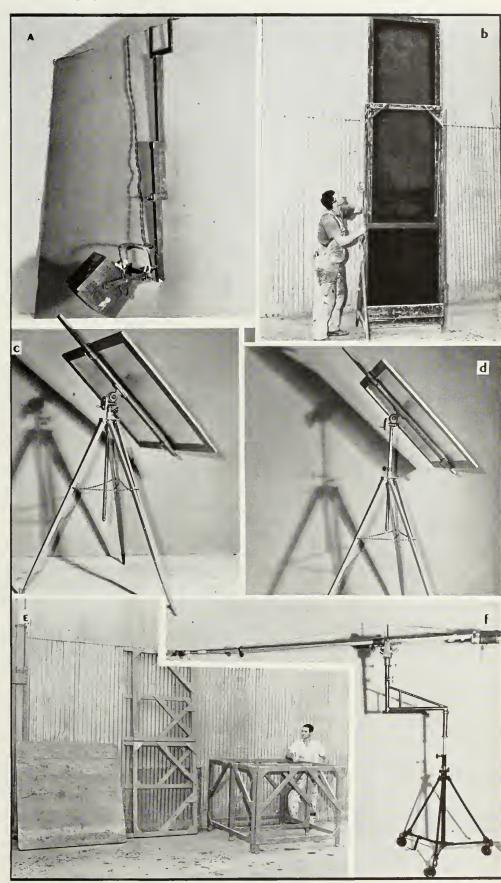
(D) Easel reflector described above in eleted position.

(E) MGM's 4' collapsible parallel, shown ruck and open. Behind the open parallel, which is proved itself handy and readily portable. is own Don Leys, member of the studio grip partment the past five years.

(F) Duralumin swing-arm boom with MGM 3-down.

Watch for further presentation of grip equipment items and let us have your suggestions as to the best way to eventually present this material in classified form as the first Studio Mechanic's Handbook. Comment, suggestions and criticisms are eagerly awaited by the editors of

International Photographer and the studio department heads, who are cooperating with the magazine in this constructive job of gathering the information on all types and kinds of studio equipment into handbook form for the first time.



All MGM grip equipment illustrated on this and opposite page is fully described by alphabetical reference in accompanying story by George M. Haines. Pictures by Eric Carpenter, Local 659, IATSE.



Typical illustration of the "hotspot" and how it is corrected for photographic purposes with the Scheibe Hotspot Iris. At left, the "hotspot,"

obscuring center detail, and at right, clear-cut correction of the beautifu exterior background.

THE HOTSPOT IRIS

Another item in series of short features on filters by Hollywood's veteran manufacturer of filter equipment.

By GEORGE SCHEIBE

PROJECTIONISTS FOR YEARS have been bothered with the "hotspot," a flare of light on the screen that is the result of the projection lens magnifying the hot light of the projection source to form a halo near the center of the projected picture. A similar bane occurs in certain type of photography, when bright sunlight is reflected from some source to cause a white glare in a portion of the camera lens.

many devices and methods have been tried to offset the "hotspot," but it was with the development of background projection effects a decade ago that some cure was needed. As usual, in our industry, where the toughest problems are battled until they are solved, this one also was. The solution was mopraratively simple. We developed what is known as the "hotspot iris."

The Scheibe Hotshot Iris is adjustable in many ways. It is used on the projector to eliminate the "hotspot" in the center of the screen so it will photograph as evenly as the sides of the screen. The Hotspot Iris is made in 6-inch x 6-inch and 8-inch x 8-inch sizes with a blue or neutral color in the center of the Hotspot. In the neutral the .25, .50 and the .75 is used. The spot is about one to two inches in diameter. The Hotspot Iris is moved toward and away from the lens to eliminate the spot on the screen.

After the "hotspot" is eliminated the screen is photographed with the actors and actresses metween camera and screen.

Almost any kind of background is used on the projection screen which goes to make up the scene, to produce an exterior in the studio, that seems to have been made outside, on location. This type of photography can be used in any kind of work where a background is used. Cameramen go out on location to photograph backgrounds for process work the world over and the Hotspot Iris aids materially in making such efforts possible.

Since inaugurating this series of short articles on filters for International Photographer, we have received a number of interesting communications on the subject. I want to say at this time that anyone who desires information on any phase of filters, or advice and suggestions on photographic problems requiring special filters,

should feel welcome to send their questions to us in care of International Photographer.

Since the early days of the motion picture industry we have been cooperating closely with

the studio camera boys in assisting them to solve special problems; and we will be glad to assist or advise any readers of International Photographer at any time.



NEWSREELING THE FIGHT at last month's short-lived world's championship bout between Joe Louis and Local 37 electrician Jack Roper, were the following camera experts: Left to Right, top row, Len Powers, Royal Babbit, Sam Rosen, Marcel Grand; lower row: spectator, Herbert Aller, business representative of Local 659, IATSE, T. F. Jackson, Buddy Harris. Needless to say, professional photographers all are members of Local 659.

RULING FAVORITES

EASTMAN'S three new motion picture negative films have quickly established themselves as the favorites of the industry. Plus-X for general studio work... Super-XX for all difficult exposures... fine-grained Background-X for backgrounds and all-round exterior work. Each makes its special contribution, and all have that typical reliability closely identified with Eastman films. Eastman Kodak Company, Rochester, N. Y. (J. E. Brulatour, Inc., Distributors, Fort Lee, Chicago, Hollywood.)

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- 7. Good grain characteristics.
- 8. Marked reduction in halation.

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CIOSE-UPS

Alan Baldwin: Film-loader who may reach stardom

THE LOADING ROOM is the stepping stone to professional photographic work in the motion picture lots as things are organized in the present highly complicated production routine. Studio cameramen come from the laboratory, commercial work, and other allied fields, of course, but the film-loader classification of Local 659 amounts to an apprenticeship in motion picture photography today. Most conspicuous graduate of late has been Alan Baldwin, whose pleasant personality and acting talent popped him right into a long term contract to Samuel

In case any reader has the idea that this is a silly example of promotion in the studio camera departments, don't get the idea that filmloaders, Alan Baldwin included, stand around holding their profiles up for the inspection of studio executives in hope of landing an acting contract. Their job has its importance and they take it seriously, plus always being on the alert to pick up tricks of the trade from their more advanced associates.

Alan Baldwin paid strict attention to his filmloading duties on the job. His acting contract was a result of extra-curricular activity after hours. He made a hit in the lead of a Warner Brothers studio club amateur production of "Winterset." This got him screen tests at Warners, Selznick and Paramount. To prove that Mr. Baldwin is a typical average conscientious film-loader in application to his duties, he even loaded the film for his own screen test! And he made sure that the test was delivered to the laboratory in good order.

Rechristened Alan Baldwin for acting purposes by the astute Samuel Goldwyn, who predicts an interesting future for the engaging personality so ably captured in the accompanying illustrations by Bob Coburn, ace stillman mem-ber of Local 659, IATSE, this typical filmloader was christened Albert Korngute. A Los Angeles boy, he was educated at L. A. Junior College and U.C.L.A., where he majored in psychology. Leaving school he decided upon me tion picture work as a career and with brigl college boys a drug on the market, he too a job at Warner Bros. Beverly Hills Theatr as an opening wedge.

In 1934 he was accepted into membership c Local 659, IATSE, and simultaneously lande a job in the film-loading room at Warner Bro. He has been busy there ever since, learning th rudiments of the photographic game and practicing amateur acting as a hobby until Samue Goldwyn recently decided to place him unde long-term contract.

The responsibility of young men like Bald, win, of whom there are some 50 employed in the major studios, is to get the film from the laboratory, load the magazines, keep magazine clean and in repair, check cameras for mino adjustments and cleanliness, and to keep at accurate record of all film—unexposed and ex posed-within the ken of the studio camera de partment.

While this assignment may smack of routine it is obvious what complications could resul in modern studio production with many unit at work using different emulsions and photo graphic technics, if film-loaders didn't pay stric attention to their chores. Not to mention the resounding squawks that might issue from ar irate director should one of his pet scenes fai to appear in the rushes because the magazine wasn't properly loaded.

In average studio practice there are six film loaders busy on the day side, and one night man. Three or more handle negative. Two or more (members of Local 659, IATSE) handle film for sound recording and one is busy attending to the needs of the stillmen. In the independent field loading is generally handled by the assistant cameraman. The film-loader is not considered part of the camera crew proper. He handles assignments for all the studio camera crews, working cooperatively with his fellow

It is a general practice with alert loaders to scorn an empty magazine. In preparation for any exigency, they always try to get empties loaded with fresh unexposed film as soon as possible. The film-loaders handle most of the office detail of the camera department in addition to their mechanical duties and this keeps them pretty busy. But the progressive element is ever on the alert for opportunities to be on the set to watch and learn from the veterans of the camera crews.

Although motion picture release prints go into the theatres in the 2000 ft. reels prescribed by the Academy, 1000 ft. magazines are used in photographing, since this is the fullest capacity practically possible for production purposes. For some special types of photography smaller magazines are used. Average waste in starting and stopping, photographing of slates, etc., modern efficient camera motors, is about 10 per cent of a 1000 ft. magazine.

While Alan Baldwin is determined to try and capitalize upon the opportunity given him by Mr. Goldwyn he still retains his membership in Local 659, IATSE. Being a level-headed young man, young Baldwin realizes that screen stardom, by all statistical standards, is a fleeting will-o'-the-wisp and should the thespic going get too wispy, he'd like nothjing better than being a studio cameraman for a profes-That is a sensible viewpoint; and the friends he has made in Local 659 wish him luck.

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These pictures of Alan Baldwin, film-loader, signed by Samual Goldwyn to a long-term contract, are by Bob Coburn, stillman member of Local 659, IATSE.

ACADEMY REPORT

Second installment of industry's first complete standards recommendations for rear projection equipment.

PART V

THE OPTICAL SYSTEM

SPEED (Basic):

The optical system shall have a speed of F2.0 or greater.

SPEED (Auxiliary):

The above recommendation should not be construed to mean that developments beyond a speed of F2.0 are not anticipated. On the contrary, an F1.6 system is to be expected in the future.

ADJUSTMENT (Basic):

Adequate lateral, vertical and longitudinal adjustment facilities shall be provided for all units of the optical system, irrespective of the projection lens.

COLOR BALANCE (Basic):

The optical system shall contribute no noticeable color and that same order of spectral uniformity should extend to a wavelength of $3800~{\rm A}^{\circ}$.

COLOR BALANCE (MIRROR SYSTEM) (Basic):

All mirrors used in the mirror type optical system shall be surfaced with aluminum, or at least its equivalent.

PRIMARY CONDENSER

FOCAL LENGTH (Basic):

The primary condenser shall be of a focal length to give a maximum amount of light output using an F2.0 system. (See "Speed, Auxiliary," Page 10.)

PROTECTIVE DEVICES (Basic):

The condenser mounting shall be so designed as to give sufficient clearance within the lamphouse to allow for expansion of the condenser due to increase in temperature during operation. Protective devices should also be provided to eliminate destructive air currents from the condenser when the lamphouse door is open. (See "Ventilation of the Lamphouse," Page 8 and Page 9.)

PROTECTIVE DEVICES (Auxiliary):

An attempt should be made to design a method whereby the lamp could be retrimmed without subjecting the condenser to drafts or sudden temperature changes. (See "Ventilation of the Lamphouse," Page 8 and Page 9.)

CONSTRUCTION (Anxiliary):

The element of the condenser nearest the crater should be designed and constructed somewhat thicker than at present so that pitting of this condenser can be removed by regrinding and polishing as required. (Note: It has been suggested that the use of an auxiliary thin quartz plate between the arc and the preliminary element of the condenser might furnish a protection for this condenser element provided too great a light loss is not introduced.)

CONDENSER RELAY TYPE SYSTEM FOCAL LENGTH (Basic):

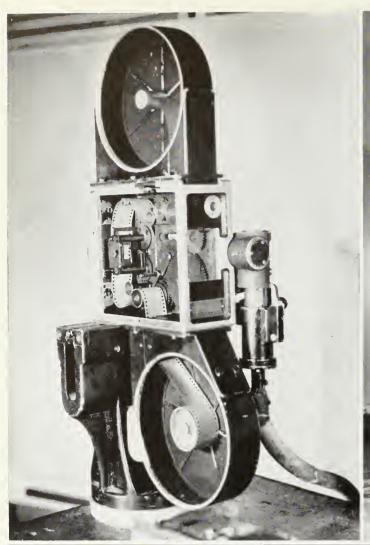
The relay condenser type system shall be designed to permit as short a set-up as possible and still deliver the maximum amount of light with an F2.0 beam or cone of light. (See "Speed, Auxiliary," Page 10.)

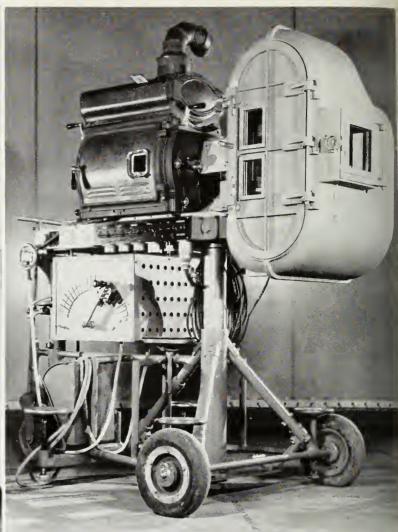
ADJUSTMENT (Basic):

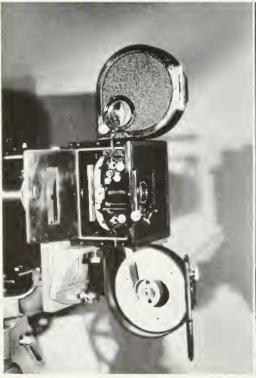
The condenser relay mount shall be so designed as to permit both horizontal and vertical adjustments in both directions with a suitable pitch thread, so constructed as to maintain their setting.

PROTECTIVE DEVICES (Basic):

The mountings of the condenser system shall be designed to give sufficient clearance to allow for expansion of the condenser











This layout features the famous Teague rear projection equipment, now used at Universal. At top left is the original Teague rear-projection head as developed in 1928, for comparison with the present Teague head, also shown unblimped and open at lower left. Bottom center shows the Teague stereoptican for still rear projection; while at top and bottom right are shown detailed setups of the Teague rear projection equipment.

during temperature rises.
LENSES

APERTURE (Basic):
A lens shall be provided with an aperture of F2.0 or greater. The screen brightness should be controlled by a diaphragm in the case of an excess quantity of light,

povided such a design could be made practal. (NOTE: The relay condenser system, cause it does not focus the crater of the c on the aperture, gives a smoother illumlation. Furthermore, this system is not limd by as many uncontrollable items as is e mirror system, such as the increase of at, increase of size of lamphouse, etc., asciated with increased speed of the mirror. Experiments have proven that it is posole to diaphragm certain types of projecon lenses used in process work without ving the diaphragm actually in the lens. This diaphragm is located just in front of e front element. Tests with Bausch and iper-Cinephor lenses show that perfectly iform light control is obtained with no ace of increase of existing vignetting or otspot due to stopping down of the dia-ragm at this postiion. The definition of e image improves greatly when the iris is opped down. Further tests with other types lenses must be made to be certain that is method can be applied to all types.) See "Speed, Auxiliary," Page 10.)

OLOR CORRECTION (Basic):

The lens shall be panchromatically corcted to conform as nearly as possible to e correction of the best camera lenses; at is, the lens should be corrected not ly visually but photographically. The secidary spectrum should be as flat as posble.

ISTORTION (Basic):

The distortion shall be less than six parts a thousand.

ISTORTION (Auxiliary):

It has been suggested that the above basic commendation on distortion be reduced if posble. However, this should not be done at the cpense of other types of lens correction.

EFINITION, RESOLVING POWER, COV-ERAGE, AND FLATNESS OF FIELD (Basic):

The definition, resolving power, coverage, nd flatness of field shall be comparable, as early as possible, to good anastigmatic phographic lenses.

ONSTRUCTION (Basic):

The lens shall be accurately constructed as to be centered both optically and mehanically.

TANDARDS OF LENS MOUNT DIAMET-ERS (Basic):

The Committee recommends that the folwing be adopted as standard for lens ount diameters by the Research Council nd submitted to the American Standards ssociation through the ASA Sectional Comittee on Motion Pictures, for considera-

ittee on Motion Pictures, for consideraon for formal standardization by the ASA:

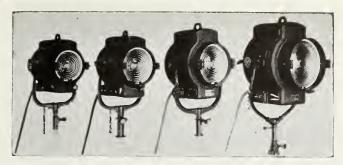
1. Lenses of F2.0 and F1.9 focal ratios are of par
ticular interest to the industry at the present
time. Everything possible should be done to
produce lenses of these speeds whose performance is satisfactory for background projection.
All possible development should be made on
F1.6 projection lenses from 4" to 6" focal
lengths. There will be a demand for this series
when it is produced with sufficient correction to
permits use in background projection work.

2. Studios will use F2.0 and F1.9 lenses up to and
including 4" focal length with the diameters
that are adopted by the manufacturers as standard for theatre use. It is strongly urged, however, that the diameters of the F2.0 and F1.9
lenses be kept as consistent as possible and
with as few changes in shell diameter throughout the series as is practical. The latter restriction applies also to any F1.6 lenses that may be
developed.

3. For lenses of longer focal lengths, the standard
lengths shall be 5" 6" 7" out of 10 consistent
lengths shall be 5" 6" 7" out of 10 consistent
lengths shall be 5" 6" 7" out of 10 consistent
lengths shall be 5" 6" 7" out of 10 consistent
lengths shall be 5" 6" 7" out of 10 consistent

For lenses of longer focal lengths, the standard lengths shall be 5", 6", 7", and 8". All other focal lengths will be in the nature of special requirements, to be supplied upon individual

requirements, to be supplied upon individual studio order. Lenses of the F2.0, F1.9, or F1.6 series with focal lengths of 5", 6", 7", and 8" will maintain an outside barrel diameter of 4½". Lenses of an F1.6 speed will be in focal lengths 4" to 6" inclusive. Lenses with focal lengths longer than 6" should maintain a constant lens diameter up to the 8" focal length at which point the speed of this group will converge upon the F2.0 series, (Note: Since these two lenses operate in such close conjunction with the



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projection movement, it is recommended that lens manufacturers contact the studios to deter-mine necessary allowances in the lens barrel to clear the projection movement employed. It is the hope of the committee that one type of the hope of the committee that one type of projection movement will eventually be adopted as standard by the industry, thus alleviating the necessity for several styles of mountings. See "Aperture," (Page 16.)

LIGHT CONTROL

T. CONTROL DIABURA CONTROL

LIGHT CONTROL DIAPHRAGM (Basic): A heat-resisting diaphragm light control shall be provided at a suitable point in the relay condenser system to control the intenstiy of the light output. This diaphragm must not affect the flatness of field.

This diaphragm control in the relay type condenser system will allow carbons to be burned at their correct amperage and thus give the maximum efficiency and maximum steadiness in light output. In an equipment provided with this control, it is recommended that the carbons be burned within =5 amperes of their rated current, as shown by the following list.

RECOMMENDED OPTIMUM CURRENTS FOR CARBONS (Submitted by the National Carbon Co., Inc.)

13.6 mm x 22 Positive Carbon

Amperes

15.0 mm x 22 rositive Carbon Am	eres.
7-16" x 9 Orotip Negative	125
13.6 mm x 22 Super II. I. Positive Carbon	
1/2" x 9 Heavy Duty Orotip Negative	175
16 mm x 20 M. P. Studio Positive Carbon	
1/2" x 9 Regular Orotip Negative	150
16 mm x 22 Super H. 1. Positive Carbon	
1/2" x 9 Heavy Duty Orotip Negative	195
(Submitted by the Noris Carbon Co., Inc.)	
Am_{j}	oeres
16 mm x 20 Positive Carbon-Type A	200
13 mm x 9 Negative Type B	225
13.6 mm x 22 Positive Carbon	
7-16" x 9 Negative	175

LINING UP METHOD (Basic):

The design should include a means of projecting a single frame for lining up purposes, permitting as much light as possible to pass through the aperture without damage to the stationary film. (Note: An auxiliary light source of sufficient intensity to permit lining up should be provided.)

PART VI GRIDS

CAPACITY (Basic):

Grids shall be designed for mirror type lamps to have a capacity of from 75 to 150 amperes. For condenser type lamps, the grid capacity shall be from 100 to 250 amperes. Both types are to be provided with 5 ampere steps and with a uniform resistance at each step throughout the whole range.

CAPACITY (Auxiliary):

It has been suggested that the above conditions can be met by providing 10 ampere steps with auxiliary controls of 5 amperes to fulfill the Basic Recommendation above.

TEMPERATURE RISE (Basic):

Grids shall be designed of such material and of a type giving a minimum resultant temperature resistance co-efficient. (See "Light Variation," Page 4.)

CONSTRUCTION (Basic):

Grids shall be built solidly and be compact yet easily portable.

LINE SWITCH CONTROL (Basic):

A remote control operating from the control panel of the projector, to open and close the power supply switch, shall be provided.

STARTING RESISTANCE (Basic):

Grids shall be so designed that when used in conjunction with a mirror lamp a maximum starting current of 75 amperes will be provided and when used in conjunction with a condenser type lamp a maximum starting current of 100 amperes will be provided. This current should be held steadily for a minimum of 30 seconds, at which time the grid should provide an easily oper-

CORRECTION: We regret that the advertisement cut of Bell & Howell Co. on Page 22 of this issue was received too late to correct the company's New York address from 11 West 42nd St. to 30 Rockefeller Plaza.

ated means for raising the current to its proper pre-determined operating value. (See "Light Control," Page 14.)
STARTING RESISTANCE (Auxiliary):

The use of a switch arranged to first provide the proper starting or heating current and then by one switching operation the proper operating current, has been suggested as one method of meeting the above basic recommendation. Such a pre-heating arrangement would aid in the most effective use of the grid during the start of operation. (See "Line Switch Control," above,) CONTACTS (Basic):

The contacts of the grid shall be so designed that the grid will give an easily operated method of resistance change and provide good electrical contacts, the efficiency of which will not vary over a period of time.

CONTACTS (Auxiliary):

For grids designed to be used in conjunction with a projector equipped with a light control diaphragm (see "Light Control," Page 14), the inclusion of a locking device has been suggested which, after a resistance change is made, gives a positive contact, rather than a contact of the rheostat or potentiometer type.

PART VII

THE FILM GATE AND PROJECTOR HEAD NORMAL SPEED PROJECTOR HEAD APERTURE (Basic):

The projector head shall be so designed that an F1.6 cone of light can be accommodated through the aperture and fill an F1.6 projection lens from all parts of the picture, necessitating that the opening behind the aperture be of sufficient angle to allow the above cones of light to reach all parts of the aperture. The projector head should be designed to accommodate FI.6 lenses (when such fast lenses are satisfactorily developed), and permit lenses of large diameter (Note: See "Standards of Lens Mount Daimeters," Page 13.) to come close enough to the aperture and not interfere with the operation or steadiness of the movement to obtain a proper focus on any length of set-up. A full screen aperture, 0.950" by 0.723" shall be provided.

SHUTTER OPENING (Basic):
The projector haed should be designed for a maximum shutter opening of 240°, this to mean that the film shall be at rest and the shutter to fully clear the aperture for this period of time. (Note: It is understood that all equipments shall be equipped with rear shutters. It has been further suggested that a 240° shutter be developed for

the camera.)

SYNCHRONIZING (Basic):

A readily accessible synchronizing device which is quick and positive in operation shall be incorporated in this design. This device shall synchronize the projector and camera shutters to a tolerance of $\mp 2^{\circ}$. MOTOR DRIVE SYSTEMS (Basic):

Provision shall be made in the design of the projector head motor drive so that the projector can be inter-locked with the camera and recorder motor drive system, and so that it will maintain the tolerances as given above under the basic recommendation "Synchronizing.

COOLING DEVICE (Basic):

A cooling device shall be provided in the optical system or incorporated in the aperture design. It has been suggested that a stream of air striking the film from the projection lens side and away from the light source, be employed. Such a device, if within the specifications given under "Noise Level," Page 21, would also help to meet the recommendations given under "Position of the Film During Exposure, Page 18, as a means of holding the film in the aperture during exposure.

For the mirror or straight condenser type of lamphouse, the design shall also include a means, located between the gate and light source, to eliminate from the film aperture

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sembly that portion of spill light not actuly used in the aperture. This device should e interchangeable to accept an F1.6 to 2.3 cone of light. The development of tch means or device is recommended priarily to decrease the amount of heat on e film trap assembly with no loss of light an Fl.6 system.

In the relay system such a device may not e necessary as the amount of spilled light practically nil. However, provision should e made for such a device should it be ound necessary.

EGISTRATION AND REGISTERING PINS (Basic):

Inasmuch as steadiness of picture is the asic and primary requisite of a background rojector equipment, the design shall be uch as to include pilot pins providing rock-teady registration. These pilot pins may e either moving or stationary, providing he above specified registration is obtained nd the pins stand up reasonably well under rojection conditions. (Note: The pilot pins of the projector should engage the same perforatoins as the camera and printer.)

ADJUSTMENT CONTROL OF REGISTRA-TION (Basic):

Adjustment control means shall be proided in registration to accommodate a maxinum film shrinkage of 0.030" per foot, his adjustment to be calibrated against the ertical adjustment of the aperture.

REGISTRATION—FILM REVERSED (Accessory):

If possible, means should be provided to reverse the registering pilot pins to give good egistration to a background print while it is necessary to turn the background print over for projection purposes.

CLEARANCE (Basic):

Sufficient clearance, that is, space between he aperture and lens, shall be left in the lesign to accommodate a projector head givng the steadiness required in the above specifications. (See "Aperture," Page 16.)

FORWARD AND BACKWARD OPERATION OF THE PROJECTOR HEAD (TWO-DIRECTIONAL MOVEMENT) (Basic):

The projector head shall be so designed as to have the ability to run either forward or backward with perfect registration with a take-up designed to take care of this twoway operation. This should be accomplished with no damage to the film as specified Page 20. This type of two-directional projector head also fulfills the function of projector head also fulfills the function of projecting a back-cranked scene with the cam-era running forward and the projector running backward, both shutters operating in synchronism.

This Recommendation is made after consideration of observations and comments made by those members of the Committee who have worked with this type of equipment. The resultant saving of production time will far more than offset any added difficulties encountered in securing such design.

FORWARD AND BACKWARD OPERATION OF THE PROJECTOR HEAD (TWO-DIRECTIONAL MOVEMENT Accessory):

It has been suggested that the design of the wo directional movement be such that the background print can be rewound without taking the film from the projector head, by disengaging the synchronous motor from the distributor and opertting independently.

POSITION OF THE FILM DURING EX-POSURE (Auxiliary):

A method is desired in the design which will aid in holding the film as near as possible in the same exact plane during each exposure period

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under any heating or operating condition. (See "Cooling Device," Page 17.)

ROTATION OF THE PROJECTOR HEAD (Accessory):

The projector head should be so designed as to rotate 90° either to the right or left about the optical axis, making a total circular coverage of 180°.

ROTATION OF THE PROJECTOR HEAD (Accessory):

It has been suggested that for the purposes of rigidity and registration in the equipment an attachment or device be designed to rotate the projected image 90° to the right or to the left, making a total circular coverage of 180°, rather than rotate the projector head. This might be accomplished through the use of prisms, first surface mirrors, or adaptor plates used in conjunction with a separate head.

FOCUSING CONTROL (Basic):

The design shall include a remote control for focusing, operating from the camera position.

FOCUSING CONTROL (Auxiliary):

It has been suggested that the above focusing control be provided with a rheostat and be operated by a universal motor to give a variation in the speed of focusing. This focusing device should be easily released for manual focusing.

FIRE SHUTTER (Basic):

The design shall include a fire shutter with a device to secure positive full opening when the machine is running. If of the centrifugal force opening type, an indicator should be incorporated so that the operator can at all times tell that the fire shutter is fully opened. This fire shutter should not open until the projector has reached the speed of 1200 r.p.m., and should close by the time the projector has slowed down to that speed. This opening and closing speed should be adjustable to meet special conditions where an operating speed of less than 1200 r.p.m. is necessary (Note: The amount of this adjustment to meet special conditions shall be determined by the intensity of the light source, degree of shutter opening, and speed of operation.) An auxiliary control should be included so that the light can be flashed without the necessity of running the machine.

FILM BREAKAGE (Basic):

A positive operating buckle-trip device shall be included which will stop the mechanism under conditions of film breakage, loss of loop, or take-up failure. (See "Forward and Backward Operation of the Projector Head," Page 18.)

FILM BREAKAGE (Auxiliary):

A contact breaker or mechanism to disengage the drive system has been suggested as a means of meeting the above basic recommendation.

NOISE LEVEL (Basic):

The noise level of the projector head in operation shall be 3 db below the noise level specification given for the whole equipment in that part ("Noise Level," Page 21) of these Recommendations. This Recommendation is to be met without the use of a booth or cumbersome blimp.

MAGAZINES (Basic):

The magazines shall be so designed as to be adaptable to reel or spool (optional) take-off and take-up and shall accommodate up to 1000-ft. reels.

LENS MOUNT (Basic):

A sturdy lens mount of sufficient size shall be provided to permit the use of all specified focal length lenses, with a speed of F1.6 (see "Standards of Lens Mount Diameters," Page 13). Proper stability should be provided to climinate movement and vibration and to keep the lens always in its proper focal position. The lens must accurately rack in and out along its horizontal optical axis and not revolve while focusing.



New products illustrated are described in detail by numerical reference in accompany Tradewini section beginning on opposite page.

TRADEWINDS

bdak Lens Attachments versatile; Kalart's New Synchroscope; Curtis Color-Scout Camera: Kodaslide Ready Mount; IVry's new 16 mm Arc Lamp Sound Projector for large auditorium and theatrical use; Oberland Enlarger Scries.

Kodak Lens Attachments

Kodak Combination Lens Attachments consute a series of uniformly threaded units, each fing the others, and all fitting an Adapter Fig which slips on or screws into the lens nunt of the camera. Each attachment unit is a ilable separately. The Adapter Ring is the kic unit, and only one such ring is required to mount any combination of attachments on tens. An Adapter Ring and one Filter Retning Ring provide an ideal filter mounting. Iters can be interchanged readily, so the add of a metal cell mount for each is climited. All of the more than 100 Wratten Filters available cemented in "B" glass circles to these attachments.

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) Kalart Synchroscope

The Kalart Synchroscope is a small device, ectrically operated from the battery case of e Kalart Micromatic Speed Flash (or the ireless Speed Flash) which gives a visual incation of the shutter timing in relation to ish bulb peak intensity. This is accomplished thout the use of a flash bulb, or other phographic material. A clear visual indication is ven to the observer of the shutter timing. is immediately apparent to the eye whether e Speed Flash is timed to coincide with peak umination of the lamp or if that timing is o early or delayed. The photographer can ljust the synchronizer in accordance with this dication. As illustrated the Synchroscope is istened in front of the lens and shutter to e tested, by sliding the adjustable crossed bars the camera track. This forms a stand for the Synchroscope on the cameras that have drop The viewing window is raised or lowered height in order to center it with the lens. lectrical connection is established to the batery case by means of the electrical cord extenon as shown. The small plunger projecting trough the top of the Synchroscope is gently ushed down, the Synchronizer is attached to ne battery case and set in the usual manner. The shutter should be set for a speed of /200th second or the maximum shutter speed desired. Then cock the shutter, open the ack of the camera and expose the ground glass o a strong light such as daylight or an elec-cic lamp. (Be sure the curtain shutter is open hen testing the front shutter of a camera that also equipped with a curtain shutter.) Gazng directly into the front window, release the ynchronizer in the usual manner by pressing he cable release and note the position wo slits through the opening shutter. The Synhronizer is properly adjusted if those two slits are seen end to end as one line. If the left slit is seen lower than the right slit the shutter is opening too early. The Synchronizer is there-fore to be adjusted by decreasing the spring tension behind the plunger; that is, turn the adjustment screw out a point or two. repeat the test until the desired position of the two slits is attained. If the position of the two slits is otherwise, that is the right slit lower than the left, the shutter is late in opening and the Synchronizer is to be adjusted to advance the shutter action by turning the milled tension knob down a point or two. When the two bright slits are lined up end to end the Synchronizer is correctly adjusted for that shutter and the particular type of flash bulb for which the Synchroscope is set. The dial adjustment on the front face of the Synchroscope regulates the Synchroscope adjustment. The new Kalart device goes on sale this month.

3) Curtis Color Scout

• Thomas S. Curtis Laboratories, Huntington Park, California, announce a new two-mirror, three-color camera of near-miniature size, the Curtis Color-Scout, weighing but five pounds With lens and one dozen loads of film total weight is but seven pounds and the size is comparable with a $2^{1/4}x^{31/4}$ reflex camera. Constructed entirely of aluminum alloys, with the optical chassis formed from a single normalized casting of an alloy developed by the Aluminum Company of America expressly for uses wherein complete permanence of size and shape is essential, the Color-Scout is the result of 17 years' continuous research in direct color photography. The camera embodies every known and many completely new features for precision of register, color balance, freedom from internal reflections and flare, maintenance of even illumination of the three emulsion apertures, convenience and speed of operation as well as extraordinary compactness and light-weight in an all-metal camera, the announcement states,

lts 21/4 x31/4 negatives enlarge to 11x14 with a quality usually associated with 5x7 negatives. Phenomenal speed claimed for the Color-Scout is the result of an optical design built around the very latest ultra-speed emulsions combined with the elimination of every dispensable cause of The camera is fitted with Curlow efficiency. Diafon Mirrors, eliminating refraction or double image and having the highest reflectionto-transmission ratio of any beam splitting device tested by the designer in 17 years of color experience. The overall efficiency of the camera 72 per cent compared with the usual 41 to 45 per cent efficiency. In addition the use of spectrally-selective emulsions takes advantage of every possible fraction of light entering the lens without unnecessary loss sacrificed in the attempt to obtain balanced negatives. The negative balance in the Color-Scout is as near theoretically perfect as its designers have been able to obtain with A-B-C exposures. A most careful study of sensitometric curves of all available emulsions has been made under many conditions of lighting, exposure and development and the Manual of Instruction accompanying the camera is a handbook of color information. Register is accomplished by micrometer ad-

Register is accomplished by micrometer adjustment of the mirrors in a novel optical arrangement which tests the camera for precision of register independently of its lens. Registration of the order of 1/1000 of an inch over

the entire negative field is readily accomplished in regular production. The final test for register is made with the particular lens that is to be placed on each camera and if poor color correction causes faulty image size or definition, that lens is rejected. The common practice of distorting camera register to accommodate lens faults is thus avoided.

The Color-Scout is sold with every appurtenance and accessory necessary for its safety in use. A carrying case, lined with heavy corduroy and padded to protect the camera, provides room in a separate compartment for all accessories needed in the field. An efficient lens shade is provided as standard equipment. Three regis-tered film pack adapters of the Graflex type are in the standard equipment as is also a matched ground glass panel. Eye level view finder is included. The new Curtis Color-Scout has been tooled for large quantity production under manufacturing conditions representative of the best precision methods. In consequence, the experimental, custom building features of twomirror camera manufacture have been displaced by jigs and fixtures which have cut manufacturing costs to a minimum. The price of the complete cutfit, including camera, three registered holders, Goerz Dogmar F:4.5 71/2-inch lens in Compound shutter, lens shade, carrying case and three dozen loads of sensitive material, is \$325.00. Same outfit with Bausch & Lomb 11b Tessar F:6.3 in Compur shutter is \$280.00.

4) Kodaslide Ready-Mount Changer

● An efficient, smooth-working magazine-feed device for the new Kodaslide Projector, Model device for the new Kodashide Projector, Model 2, known as the Kodashide Ready-Mount Changer, is intended for showing groups of Kodachrome still transparents or black-and-white film positives in the new Kodak Ready-Mounts. In combination with the Model 2 Kodashide Projector, it projektor is the projector when the state of the projector is projector. jector, it provides an ideal projection means, with maximum convenience and smoothness of operation. The combination is particularly useful for schools, and for illustrated lectures before small groups, as well as for home projection. Once the supply magazine of the Ready-Mount Changer is charged with a group of slides, operator can show the complete sequence without once removing his eyes from the screen. Another advantage is that the operator may sit comfortably at a moderate distance from the projector, and somewhat ahead of it, so that he is not disturbed by stray light or a position. Up to fifty Ready-Mount slides may be placed in the supply magazine of the Kodaslide Ready-Mount Changer at one time. Slides are arranged in the order in which they are to be projected, and then are set in the magazine as in a carrier, with thumb-spot in the upper right-hand corner. The slide-shifting mechanism is operated by a flexible 30-inch plunger, resembling a cable release of the type used on a camera, but larger. This plunger can be operated by the first fingers and thumb of one hand, leaving the other hand free for holding notes. Pressing in the plunger moves a slide into position, and pulling it out readies it for the following slide. When all the slides of a group have been shown, they are found in the receiving magazine in the same order as when placed in the supply magazine—so that no rearrangement is necessary for the next showing. Retail price of the Kodaslide Ready-

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Mount Changer is \$12. It was available in April.

5) De Vry Arc Projector

The DeVry Corporation announces a new professional 16 mm Arc Lamp Sound Projector designed for large auditorium and theatrical use, which incorporates all of the essential 35 mm mechanical requirements necessary for heavy duty use, including a sprocket intermittent system instead of the ordinary amateur claw type system. By means of a new development in forced draft ventilation, it is possible to use a specially designed high intensity arc lamp without creating heat at the picture aperture. Introduction of this machine makes possible use of 16 mm sound films in the largest of auditoriums. It delivers a 20x24 foot picture at a distance of over 125 feet from the screen. It has a 4000 foot 16 mm reel capacity, which allows for a continuous running period of one hour and 45 minutes.

16 mm Kodak Super X Pan

• Fast, extremely fine-grained, and possessed of other desirable characteristics, a new 16 mm film, Cine-Kodak Super X Panchromatic, announced by Eastman. has the following advantages claimed for it:

- 1. Speed equal to that of Cine-Kodak SS Pan—double the speed of Cine-Kodak Pan.
- 2. Extremely fine grain.
- 3. Better definition, so that projected pictures appear clearer and sharper, especially to persons seated near the screen.

4. Improved quality, both in contrast and in the rendering of highlights.

5. Capacity to produce superior results, outdoors or indoors, under widely varying light conditions.

Exposure recommendations and filter factors for Cine-Kodak Super-X Pan are the same as those for Cine-Kodak SS Pan. The new film (not to be confused with the former 35 mm Kodak Super-X for miniature still cameras) is available as follows:

Cine-Kodak Super-X Panchromatic Film, 16 mm, 100-foot rolls, \$6; 50-foot rolls, \$3.25; 50-foot magazines, \$3.50; 200-foot rolls, \$12, 50-foot Packette for Simplex Pockette and Filmo.

Oberland Enlargers

• Among the many enlargers now on the market, an unusually interesting and efficient series is the Oberland enlargers, of German manufacture, for which the Los Angeles firm of Robert M. Lynn is exclusive U. S. distributors. Illus-

trated on Page 27, the Oberland has many novel and convenient features. It is sharp-focused at each height, has automatic adjustment and with simple manipulation at will, can turn out sharp enlargements of 1½X to 7X. The stage, so called, of this enlarger is of cast light meta insuring against it getting loose after consider, able use. A lamp-house that always remains cool permits lengthy exposures without risk to the film.

The negative-holder is easily liftable and provided with hinges so the glass panes can be cleaned radily. Film can be introduced from the front or either right or left side. A conveniently arranged spoke wheel permits rapid action and fine adjustment, whether the operator is sitting or standing. The optical system is easily and conveniently interchangeable, and additional accessories permit enlargement up to 15X.

Complete details and prices may be obtained by writing Lynn at 923 South Grand Avenue. Los Angeles.

Beware of Lens Bargains

From the C. P. Goerz organization comes the following communication:

"Several months ago we asked and received





SECTACULAR ACTION of a wild horse chase by plane from Uiversal's "Road to Reno" is shown at left as the theatre audi-

ence sees the action and at right as the location camera crew views it, in stills by Sherman Clark, member of Local 659, IATSE.

tl cooperation of leading photographic magazi's in warning the public about spurious Grz lenses. Lately we have again receiced coplaints from persons who were victimized

by some unscrupulous individuals disposing of defective and counterfeit Goerz lenses.

"Although, to the casual observer, they resemble Goerz lenses of recent manufacture, because they have been remounted in modern cells and re-engraved with our trademarks Dagor or Dogmar, we were able to identify some as

of the old Series III, sold about forty years ago, while others were outright frauds, engraved with our identification legend by some crooked individuals. All were optically deficient because the lens members were tampered with by an unskilled person. This lack of performance is what induced the unfortunate owners of the lens to send it to us for a checkup.

"To stop this nefarious practice, we now appeal again to those who may have their doubt about the genuineness of any second-hand Goerz lens they have lately acquired, to send their lens to us for a checkup or at least to send us a full report, stating type, size, engraving, individual number and where they bought the lens. We pledge our fullest cooperation to obtain restitution for them if we find that the lens has been misbranded and sold under false pretenses.

PATENTS

By ROBERT W. FULWIDER

No. 2,149,967-Light Source for Use in the PHOTOGRAPHIC RECORDING OF SOUND. Otto Kurt Kolb, London, assignor to British Acoustic Films, Ltd., London, Eng. Application August 3, 1936. In Great Britain August 23, 1935. 1 claim.

An optical system for recording sound, making use of a metallic vapor discharge lamp.

No. 2,150,165—Motion Picture Apparatus for Projecting Composite Screen Images. Arthur J. Holman, East Orange, N. J. Application Jan. 28, 1935. 3 claims.

An optical system for simultaneously projecting three adjacent standard frames.

No. 2,150,225—Screen for Stereoscopic Pictures. *Nicholas T. Kaszab*, N. Y. Application July 20, 1937. 2 claims.

A stereoscopic screen having adjacent front and back plates of a transparent material with parallel lenticulations on their adjacent faces.

No. 2,150,319—Sound Record. Glenn L. Dimmick, assignor to Radio Corp. of America. Original application June 4, 1931. Divided and this application Dec. 29, 1934. 13 claims. A sound track having several substantially identical sound tracks within the space normally allotted for a single sound track.

No. 2,150,543—MOVABLE MOTION PICTURE SCREEN

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Ybarrondo, assignor to Patco, Inc., Los Angeles, Calif. Application Jan. 21, 1936. 10

A mechanism for moving the projection screer in synchronism with the film, and moving the projector to follow the screen.

No. 2,150,691—COLOR REPRODUCTION. Leopola D. Mannes and Leopold Godowsky, Jr., as signors to Eastman Kodak Co. Application March 20, 1937. 4 claims.

A method of producing subtractively colored positive pictures which includes extending the sensitivity of a layer of inadequate transmission

No. 2,150,704—Photographic Reversal Process Joseph C. Ville, assignor to Eastman Kodal Co. Application Sept. 3, 1937. 10 claims. A method of making photographic positives from negatives by removing the negative image and then treating the film in nucleus-forming agen and then developing it.

No. 2,151,301—Stereoscopic Photography. Car Percy and Ernest E. Draper, assignors to the Perser Corp., New York, N. Y. Application March 17, 1936. 11 claims.

An arrangement for exhibiting a picture in stereoscopic relief which has a lenticulated screen and a parallax image registered with the

No. 2,151,735 - COLORED PICTURE PROJECTOR Heinrich Bresser, Germany, assignor to Maria Bresser, Cologne-Mulheim, Germany. Applica tion Oct. 15, 1936. In Germany June 24, 1935

A device for obtaining color pictures from colorless film by means of two rotating sets of filters, one in front of and one in back of the projection lens.

No. 2,151,742 — CINEMATOGRAPHIC PROJECTION APPARATUS. Paul Goreges Cazes, France, as signor to Pathe Cinema Anciens Establisse ments Pathe Freres, Paris, France. Application Jan. 10, 1938. In France April 1, 1937.

A projector having a lamp house rotatable about bearings, and a motor, located in the rotatable portion, whose shaft acts as the previously men tioned bearings.

No. 2,151,822—FILM MARKING DEVICE. Arm-stead C. Winchester, assignor to RKO Studios Inc. Application Oct. 16, 1935. 6 claims.

A film marker for cameras in which one of the marking members moves in a spiral path relative to the other member to remove film punchings

No. 2,151,899—Process for the Production of Colored Picture Films. *Maurice Combes*: Paris, France. Application Nov. 26, 1935. It Germany Sept. 25, 1934. 7 claims. A process of producing colored films in which the opposite sides of a positive are differently dyed.

No. 2,152,221 — FILM FEEDING DEVICE. Otto Steiner, Germany, assignor to Siemens & Halske, Aktiengesellschaft, near Berlin, Germany. Application Sept. 23, 1936. In Germany Oct. 3, 1935. 4 claims.

An intermittent motion for different width films comprising a beating lever around which the

No. 2,152,224—MULTIPLE IMAGE OPTICAL SISTEM. Richard Thomas, Los Angeles, Calif Application June 30, 1936. 7 claims.

An optical system for four color additive pictures making use of four segmental optical units arranged about a common axis parallel to the optical axes of the units.

No. 2,152,369—FILM MAGAZINE. Lloyd E. Whit taker, Hollywood, Calif., assignor to Technicolor Motion Picture Corp. Application Aug

10, 1937. 8 claims. A magazine for motion picture film having a light trap which may be removed endwise from the side without disassembling the unit.

No. 2,152,621—Base for Color Copying Screens Franz Piller, Munich, Germany. Application May 29, 1936. In Germany June 4, 1935.

A color copying screen having a metal foil base

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featured in the film, which Paul Sloane is directing, are Preston Foster, Ellen Drew, Andy Devine, Ralph Morgan, Gene Lockhart. William Henry, and Ma-jorie Gateson.

m the exploitation still series for Paramount's "Geronimo!" in which of Thundercloud (on cover) has the title role, come these striking e-ups by Jack Koffman, stillman member of Local 659, IATSE. Also



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INTERNATIONAL PHOTOGRAPHER LAND STAND STAN

Vol. 11

Direct Color Still Methods Compared—Hooper, Page 5 Iris for Emphasis—Scheibe, Page 6 Projection Symposium, Part VII—Hilliard, Page 7 Sound Equipment War, Page 12 Sometimes They Must Stand Still!—Marion, Page 15 New Shift Modernizes B & H Camera. Page 16

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On the Cover

Effectively capturing the menace of Chief Thundercloud as "Geronimo," famous fighting hero of the Apache Indians of the Southwest, is this still

by Jack Koffman, member of Local IATSE, for publicity picture series on Paramount's production based on the tragic fight of native Indians against invasion of the white men.

Evor, ED GIBBONS; Managing Editor, HERBERT ALLER; Art Editor, JOHN CORYDON HILL; Business Manager, HELEN BOYCE.

tributing Editors: Lewis W. Physioc, Fred Westerberg, D. K. Allison, George HURRELL, J. N. A. HAWKINS, PAUL R. CRAMER, WILLIAM COMYNS, G. M. HAINES. yright, 1939, by Local 659, International Alliance of Theatrical Stage Employees and Moving Picture Machine Operators of the United States and Canada.

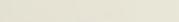
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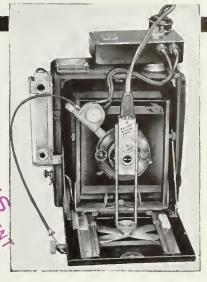
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direct color still methods compared

Rang of the different direct color photography methods and color separation technique in a non-technical report the benefit of advertising, exploitation and publicity executives who are called upon to O.K. color photography.

By DON HOOPER

CH COLOR STILL situation is just as muddled and sed as the subject of motion picture promoted in color, discussion of which was instant by INTERNATION L PHOTOGRAPHER last the announced intention of trying to clear tuch of the confusion and misinformation at field. A few conversations with men in increase photography, advertising agencies and her raphic arts and with firms catering to those will reveal just as much disputation, claims counterclaims as our professional Hollywood rs know so well to exist with regard to mpicture color.

typical instance in my experience was my orter with Mr. Sam Potter of the D. P. Brother d gency, which handles the Oldsmobile camia, conversations with Potter during a trip a last year for Raphael G. Wolff, Inc., phophing the new 1939 automobiles, led to my promising to deliver him a resume of direct

recording and reproduction.

ke many of us, Potter had collected over
ent years a huge file of correspondence and
it ature on the subject, in which he is vitally
nested. It included communications from viruy every big name lithographer, engraver,
or er and ad agency engaged in color pho-

o aphic reproduction.

nis file, and I am sure there must be many irlar, had left Potter in much the same mudle that confronts the executive who has inegated motion picture color photography lans and the many controversial viewpoints in field. Naturally, from each writer, the particle ar process in which he was engaged was a best," and little consideration was accorded to the transfer of a quandary than when he tailed to investigate the subject and asked me of stick my chin out." by putting down my to k views and recommendations.

has factual reports of observation, investin and experimentation. Following is the atim copy of my communication to Mr. er, of September 19, 1938, supplemented by rmation and facts on technical advances since date to bring the report up to date. The

rt follows:

t your request, I herewith submit my humble ions regarding direct color photography and r reproduction. This will indicate my attiregarding the very hecklish problem of ining the most desirable direct color photobhic reproductions.

here are many ways to record a Direct Color tograph. Some methods are more accure than rs. The one that gives the best color separa-

is, of course, the most desirable. Below listed the various methods of Direct Color tographic Recording. System No. 1 gives most accurate color separation; No. 2 next, so on:

Detour!

With many of our technician collaborators on our series exploring the motion picture color systems and the many pro and con arguments in that field, busy with the current studio production rush, we toss into the gap this month a provocative roundup o factual information on the color still situation, in which there is equally sharp disagreement as to just what is the most ideal system to use. While the last thing we would wish would be to see any of the boys on the outof-work sheet, we are hoping they'll find time within the next month to get together on further steps in our series on color.—Ed.

1-Using three separate films or plates, exposing one at a time, each through proper filter in any adequately braced view camera.

2—Using the sliding back camera where three separate films or plates are exposed in rapid succession, each behind a suitable filter.

3—Using an approved type one-shot camera. Here three color separation negatives are simultaneously made. The color filters are built in the camera

4—Using 35 mm Kodachrome (this would be used only in cases where it was absolutely impossible to make the shot with any of the other three processes). The high emulsion speed of Kodachrome is its greatest virtue. (There are many hazards.)

NOTE: (Kodachrome is recommended by many so-called authorities for candid work. I think, in most cases, however, even when candid color shots are required, I would consider using the one-shot camera and staging the action. This staging can easily be done by any good illustrator, and gives the effect of having been made candidly.

(In this connection note later comment on cut-film Kodachrome in larger sizes made available last fall.—Ed. Note.)

This should indicate that I do not think it is conducive to best results to shoot a still life subject with a one-shot camera, or make shots employing the use of models with 35 mm Kodachrome, unless, of course, some very unusual circumstance prevails.

I see no need for considering any of the screen plate processes such as Dufay, Finlay, etc., unless for some reason the other four above mentioned could not be obtained and in that case, Dufay would be the choice.

These conclusions are based on the results of

six months' research in direct color photographic reproduction, which I did for the Western Lithograph Company of Los Angeles, California. Very exhaustive tests, experiments and analysis were made through cooperation with major motion picture studios and the Thomas S. Curtis Laboratories in Huntington Park, California.

Assuming that the pictures have been recorded, I think these are the best methods to

employ for reproduction:

1—That a Carbro print be made from the separation negatives of recording system 1, 2 or 3. Carbro positively gives the best photographic reproduction on paper from three-color separation negatives. However, I have seen some very splendid imbibition dye prints on the Coast, as well as in Chicago and Detroit. I believe that great possibilities lie in store for dye printing, and that when it can be accurately controlled, it will even surpass Carbro. It most certainly is easier for the engraver and lithographer to separate, which saves on re-etching.

2—That if there are no corrections necessary, and the Carbro print submitted is okeh, then the original separations should be used for reproduction and the Carbro retained only as a color guide. (No separation negatives ever made from any Carbro could ever hope to be as accurate or contain as many tonal gradations as the original separation negatives from which a Car-

3—That if retouching, airbrushing, stripping in or any altering whatsoever is necessary, it be done on the Carbro to the client's satisfaction, and then the Carbro be used both to make separations for reproduction, and as a color

guide.

4—1f 35 mm Kodachrome is the recording medium, I think the best results are obtained if and when the engraver has suitable lens equipment for making screen negatives to any size direct from the Kodachrome transparency in his regular screen camera. In the case of lithographers who are using Kodachrome, I think they should use a separator such as the Curtis Type 2 Kodachrome Reproducer for making their separation negatives from the Kodachrome transparency, and then make their screen positives on glass in the regular screen camera. This reproducer has the faculty of getting more tonal gradations from a Kodachrome transparency than any other known method. It is not recommended for engravers because it means two additional steps and the loss incurred here will be greater than that which occurs in the direct method as indicated above.

I believe the only reason engravers and lithographers advocate 35 mm Kodachrome as a medium in direct color photography, is because it means added business for them. I am sure they would advocate any other new process that was so universally popular and would try, by some manner or another, to turn out good reproductions from it. As Eastman Kodak Company ad-





mits 35 mm "Kodachrome was made primarily for the amateur," and, it should have very little function outside of that field.

With the possibility in the near future of being able to get Professional Kodachrome in cut film sizes, these facts may be somewhat The processing hazards, however, will altered. still exist. The tremendous latitude Kodachrome cut film has in recording both color and detail in extremely hot highlights, as well as in deep shade, is not only encouraging but amazing. This larger size Kodachrome will also help in recording fine detail. About fidelity of color in an effort to obtain facsimile, I don't know. However, I wish to state that exhaustive tests at which I was present, were made exposing both type A and Regular 35 mm Kodachrome to a standard color chart. It was here definitely proved that both deep and pastel colors could not accurately be recorded at the same time on the same film. With good processing obtaining, the pastel colors could be recorded at the ex pense of the deep colors, or vice versa. What would be considered a normal exposure would give slight falsification to all the colors. Slight over-exposure would favor facsimile recording of the pastel colors, and slight under-exposure would give a truer rendition of the deep colors.

I believe the greatest possibility for 35 mm Kodachrome for professional use is in the motion picture field, and that its success there will not be achieved until a system of negative-positive processing is instituted. The reversal system should only be considered for 16 mm amateur use, where only one print is desired. (Please see my article in Sept. 1937 International Photographer on "Negative-Positive Color.")

One new process looming up as a photographic possibility for direct color photography that can be controlled by the photographic artist is the new Agfacolor process which results in a positive transparency containing a pure dye image similar to Kodachrome.

Processing, however, it is expected, will be possible to anyone familiar with the standard reversal development routine. The dye is contained in the emulsion, and is brought out by a special coupling agent which is contained in the second developer. This same emulsion Agfa uses for their new film can also be coated on paper. Should they adopt a negative-positive system in place of the reversal system, color prints on paper would be a cinch for almost anyone to make and should soon become quite commonplace.

From all this, you are no doubt aware that I think 35 mm Kodachrome is not as yet the proper medium to use for automobile illustrations. I hope that what I have written here is comprehensible, and will be of assistance to you

in collaborating with client, photographer, engraver or lithographer, when endeavoring to determine what method to use for the job at hand.

This concludes the report text. The following data has since been obtained.

At the time of writing this letter to Mr. Potter, we had just received back from Eastman Kodak Company some 4x5 inch experimental Type B Kodachrome which I had shot for Mr. Wolff on Oldsmobile. This together with what was already in possession of General Motors' photographic research laboratories, headed by Mr. Philip Filmer, was as referred to above most encouraging. Five million post-cards were successfully lithographed by Mr. Filmers' department from this 4x5 inch Oldsmobile shot.

Since then what has taken place is history with which most of our readers are well acquainted. It might be well, however, to relegate the new Profesional Kodachrome to its proper place as a recording medium, and also, to set forth the considerations that it should be given in reproduction.

Because of the fact that even negatives made through or reflected from the mirrors of a oneshot camera are more correct from the standpoint of color separation, and better also, as far as tonal gradations are concerned, than the separation negatives made from Professional Kodachrome, I would place this new tripleemulsion in fourth position on the desirable list. It is no faster than the average commercially accepted one-shot cameras, it offers processing hazards beyond control of the photographer, and as far as we here on the Coast are concerned, requires a week for processing, even when sent air-mail, special delivery both ways. It does possess the virtues of enabling the photographer to utilize full front and rear horizontal and vertical swing facilities, together with the advantage of employing micro-tessar lens (for macro-photography), wide angle lenses, and even "beer-

As far as Direct Color Photographic Recording is concerned, all four methods are commercially practical, but where paramount accuracy is desired, method No. 1 should always be employed until the nature of the subject matter exceeds its limitations. The No. 2 should be resorted to, etc.

When considering the Professional Kodachrome from the standpoint of reproduction, I would recommend the same general procedure as was suggested for the 35 mm material, with the exception of course in the case of lithographers where a larger separator is necessitated.

If any of you readers wish further elucidation or feel that your toes have been unjustly stepped on, you are invited to write this author in care of the INTERNATIONAL PHOTOGRAPHER.

These beautiful effect shots with Iris filters described in accompanying story by Geo-Scheibe, Hollywood filter expert.

iris filters

By GEORGE SCHEIBE

IRISES, known aso as Vignetters for closes, and inserts, are coming back into use agaster a number of years. They were very muse in the early days of pictures and weably-handled in many ways to point up certaction. Cameramen and directors, who are loing for a new twist in technique that can very effective on many occasions, can well low the old adage, "There's nothing new unthe sun," and go back to the Iris filter witneresting results.

As illustrated, there are two main types, graduated Iris, which darkens the outer part the picture, and the White Iris, which will me the outer part of the picture white or very light Varying size Irises are made to suit any left. They can be round, oval or in special design. The White Iris has a tendency to produce stereoscopic effect, since it seems to make subject come out from the screen. You sholl generally have your Iris filter made for a certain lens so it will always come out the saw whenever you use it.

For motion picture work, many subjects of effective inserts both from the story action of dramatic effect viewpoint. In almost every stance, they can be given even greater value by the proper use of an Iris filter. Closest can benefit from the same technique and imaginative study of scenes and situations will discontinuable possibilities for these once very polar effect filters.

In still photography, Irises have, of counalways been used for certain types of portra-However, it is surprising the number of prographers who spend time fooling with privage and negatives to get effects that could just easily be accomplished by slipping an Iris fill in front of the lens.

Whether for still or motion picture scenhowever, a safe basic rule to remember is twhen you want to get an effective shot twill strongly emphasize one particular part the subject, such as the beautiful yuccathe cascading waterfall in the accompany illustrations, try an Iris filter when other idand tricks fail to accomplish best results.

We want to again remind readers of INT NATIONAL PHOTOGRAPHER that any discussion questions on filters and their use will be w comed and if you have any tricky problem this field on which you want suggestions advice, don't hesitate to write to us.

ROJECTION SYMPOSIUM, PART VII.

coplete lowdown on scrupulous technical care exercised in developing test reels for theatre use in Academy Reeach Council's campaign for standardizing theatre sound equipment characteristics, by ARC committee chairman.

By JOHN HILLIARD

MGM Studio Sound Department

TEREST to technicians and particularly to ctionists is the work of the Academy Research Council in standardizing theatre sound ment characteristics. The state of this root is brought up to date in a report by the Hilliard, chairman of the committee in the e, which was presented as one of the at at the SMPE spring convention in Hollyon in April. During the past two years INTERVINAL PHOTOGRAPHER has kept projectionist and other interested technicians and tives informed on this work. This month reak in on our projection series by outling engineers of the sound equipment affacturing companies, to present the first liment of the full text of the Hilliard report in the state of the Hilliard report in the state

ny members of the SMPE familiar in genwith the theatre standardization work of
council, from direct contacts with the
oricl and Committee and from previous reand publications detailing our activities,
is paper will cover only very briefly phases
or program which are already well known,
concentrate more upon activities upon which
has been little or no previous publication,
great deal of our effort during past year
asceen devoted to preparation of various types
of st films and tools for use in the field, so
ited outline of difficulties encountered and
rems which had to be solved before we
able to even approach our ultimate aims
or these lines will undoubtedly be of interest.

vien this Committee was set up early in 1937, marks step was to recommend Standard Electic Characteristics for common types of theatrest ducing equipment, in order that the studios of the able to record for best possible reproporulation on these standard systems.

Sindard Electrical Characteristics were arrived to visiting various representative theatres in legical district, and conducting a great number of listening tests at various settings of the legical characteristics in each theatre. Important of this work need was emized for a test reel containing representative sound recordings from all studios. Such all was made up and through its use the onittee was able to correlate listening tests of ucted in the various theatres.

is test reel was so useful to the Committee in it was later decided to make prints available to those in the field who might have need such a reel—that is, equipment manufactures, servicing organizations, theatre circuits. During the past year or so a great many r so f the reel, known as the Research Countil Cheatre Sound Test Reel, have been distincted throughout the United States, and prints a been sent to Canada, Ilolland, Belgium, Germany, Sweden, France, England, Austa, Switzerland, Czechoslovakia, Brazil and a Africa.

owever, for purpose of checking theatre rerucing equipment in the field, the reel was dered to be somewhat too long, so the Comle has recently made up a new Theatre ded Test Reel. Because of its shorter length proximately 1000 feet, this reel should be of derably more value for every day theatre every day theatre

ntaining representative examples of recordfrom current product from each of the eight

New Bulletin Available

Technicians, and particularly projectionists interested in the work of the Academy Research Council in striving to improve the standards of theatre sound reproduction, will be interested in a new Technical Bulletin just issued by the Council, which presents in handy form the full details and costs of the various test reels now available for adjusting and maintaining theatre sound reproducing equipment to quality standards. Work of the Council in developing these reels is thoroughly described in the accompanying article. If you haven't already received your copy of the Bulletin communicate with Gordon S. Mitchell, manager of the Council, at 1217 Taft Building, Hollywood, or if you prefer, International Photographer will be glad to forward your correspondence.

studios participating in the Research Council cooperative technical program, this Test Reel furnishes a quick and immediate check of the overall sound quality of an auditorium as set to the Standard Electrical Characteristic and with the type of product played regularly in the theatre.

The reel contains both sound and picture, with dialogue and music recording so chosen that assembled reel contains a representative example of sound as currently recorded by each studio. One of these recordings is a Hi-Range print which serves as a check on amplifier capacity in relation to volume of auditorium which is under consideration.

Reel also contains an excerpt of piano and other musical instrument recording, included for purpose of furnishing more critical flutter test.

For setting theatre sound reproducing equipment to Standard Electrical Characteristic, Theatre Sound Test Reel furnishes a tool by which an optimum setting for presence and intelligibility, combined with natural balance between high and low frequencies, may be obtained for all current product.

Use of this reel demonstrates inadvisability of having too much low-frequency electrical response which brings out noise reduction bumps, footsteps and parisitic low-frequency noises present on set.

We might point out that judgment is required in use of Theatre Sound Test Reel as product must be evaluated in terms of material at hand, that is, crowd noises and people talking in a loud voice or excited manner should not be expected to have same quality and chest tones which are present in conversational dialogue in a quiet intimate scene.

The Council and Committee have always felt that electrical and acoustical curves furnish valuable means of setting equipment, but that the final criteria should be listening test of equipment. For this reason all of our standards to date have been set up on the basis of listening tests correlated with engineering data.

One of the purposes of the Standard Electrical Characteristic is to provide basis for an eventual standard recording characteristic. We believe that new Theatre Sound Test Reel demonstrates fact that recording characteristics of various studios are very much closer together than they were a year or two ago.

Material contained in the reel is not a sample of the best recording available, but is typical of average.

Committee also realizes that it is necessary to keep samples of recording from various studios in the reel up-to-date and for this reason a procedure has been set up whereby individual studios will, from time to time, submit new sam-ples for inclusion in the Theatre Sound Test Reel of approximately same length as sample already included in the reel. All users of Theatre Sound Test Reels will be notified of these substitute samples as they are available, and will be given the opportunity of purchasing individual new samples to be spliced into their print. By rotating and spacing this "substitution of samples" procedure, prints of the reel will be kept up-to-date at minimum of cost to users, and new samples will replace deteriorated prints. This will furnish an inexpensive means of replacing reel as well as keeping it representative of up-to-date recording.

In Committee's work in setting up Standard Electrical Characteristics, need for a good Standard Multi-Frequency Reel was very evident as this type of reel provides only tool to evaluate listening tests in terms of Electrical Characteristics.

Previously, two general types of Frequency Reels had been in use. One of these was a toerecorded negative in which the printing process had been eliminated to obtain steadiness of level in each frequency, a good frequency response, and freedom from printer trouble. This method proved quite satisfactory from a technical standpoint, but negative was costly to make and its life in field was short in comparison to life of a print.

The other was prints of either variable density or variable area recording. Prints of Frequency Reels were subject to several sources of variation, some of which follow:

- (1) Weave trouble in recording and reproducing.
- (2) Bad flutter content in both high and low frequencies.
- (3) Variation in printer slippage which cause non-uniform high frequency response.
- (4) Non-uniformity of emulsion during drying process and manufacture, causing periodical changes in density and gamma which in turn create a variation in output of as much as 1 db.

In considering this matter, Committee found (in opinion of users of this type reel) that some of available reels contained too few frequencies, while others contained too many frequencies in one case, the frequency reels not having a

New Edition of Westerberg Tables

In answer to hundreds of inquiries, International Photographer is pleased to announce that a second edition of the popular Cinematographer's Book of Tables, by Fred Westerberg, member of Local 659, IATSE, and Contributing Editor of International Photographer, now is in preparation for early publication. Mr. Westerberg is now engaged in the task of bringing his material up to date and adding a number of important new tables, and it is hoped that the new volume will be on the press by early Fall.

In announcing the new edition, the editors of International Photographer would like to point out that due to the specifically limited field of users for such a handbook, we are unable to gamble on possible sales and therefore must restrict the print order to 2,000 copies. This is POSITIVELY the total number that will be available and since it is a certainty that more than 1,000 will be immediately snapped up by members of Local 659, and other studio technicians, we are establishing a policy of filling orders by reservation.

If you have found Westerberg's Tables an invaluable time-saver, be sure not to miss ont on the new edition. Place your order immediately, either through your dealer or by personal letter. You need not send in any money, but be sure you reserve your copy immediately. Watch for announcement in *International Photogra*pher of the exact date of publication.

sufficient number of points to properly determine the electrical characteristics, and in other case, consuming too much of service man's time for everyday use.

After critical consideration of critical points in electrical characteristics and necessity for particular frequencies, it was decided to make available two specifically different frequency reels.

First, termed Secondary Standard Multi-Frequency Test Reel, for purpose of the routine checking of theatre characteristics, contains the following frequencies:

1000, 40, 70 100, 300 500, 1000, 2000, 2500, 3000, 3500, 4000, 5000, 6000, 7000, 8000.

Second, called Primary Standard Multi-Frequency Test Reel, is intended for use in installation of new equipment or for complete check of an electrical characteristic by equipment manufacturers, servicing organizations, or studios. Primary Standard Reel should also be used for those particular cases when more points on the curve are to be investigated and might be necessary in routine check. Following frequencies are included in the Primary Standard Reel:

Announcements before each frequency are included in both Primary and Secondary Standard Reels to facilitate use of reels.

To overcome difficulties with then current frequency reels-that is, fact that in some cases negatives were used which were expensive and had short life, or in case of prints where it was found that many prints did not agree when subjected to field tests, Committee laid out following specifications for Standard Multi-Frequency Reel for field use:

First: the reel must be accurate, that is, the level response within each frequency must be held to within 1/4 db;

Second: the print must be reproducable, that is, a method of individual calibration must be set up so that prints from the same as well as different negatives will give the same electrical characteristics on the same equipment within at least 1 db, and;

Third: the reel should be relatively inexpensive in comparison with the reels then in existence and prints should be provided in order to give a longer life and consequently reduced

With method of individual calibration and as long as variation within any one frequency in one reel is maximum of 1/4 db, variation of Electrical Film Level or of correction factors from one reel to another is of relative unimportance.

In order to achieve widespread use, it was

recognized that cost of reels should be kept as low as possible consistent with quality and determined tolerances, and could be controlled by limiting the number of frequencies, length of each frequency and by comparatively large quantity production of prints calibrated by a relatively simple, yet accurate, method.

In preparation of Variable Density Reel first problem encountered was non-uniformity of emulsion resulting from use of conventional drying This non-uniformity appeared as periodic fluctuation in gamma along the length of film, which in turn created variation in output by as much as 1 db from prints off original negative. This fluctuation, while difficult to detect with a densitometer, appears as periodic fluctuation in graphs obtained from a continuous level recorder.

These recording volume indicator graphs clearly indicate the periodic variation in output.

There is exceptionally constant output of print from new continuously dried stock. There are no periodic fluctuations and average level is maintained within a range of 0.2 of a db.

It might be pointed out that when usual rerecording methods are employed, fluctuation in conventional type stock may amount to as much as 31/2 or 4 db when fluctuation in the original and the rerecorded negatives fall in phase.

By using this type stock for all frequency reels, periodic fluctuations in print arising from stick marks in film drying process have been eliminated.

Next question was method of calibration. After the frequency reel negative had been made several prints were struck off and run on continuous level recorder. As each print was run continuous level recorder tape, as well as a VI meter, were carefully watched for variations in output level in each frequency. From this group of prints the one with the best level response was selected as a calibrating print. This print was then projected on the screen and inspected for scratches, oil, dirt, or any irregularity of the track which might affect output. If no such irregularities were indicated, this particular print was then calibrated on a recording micro-

This instrument has as its function production of a continuous detailed record of transmission (where density equals the log of 1 over the transmission) of sound track. That is, transmission of each small section of track is measured and automatically recorded on film. mission of film is defined as ratio of the light transmitted by film to the light incident to

Means are provided for slowly scanning film at a constant velocity so that continuous record is produced.

Light from a very steady source is focused upon sound track in a fine line by an optical slit system. Transmitted light is collected h a photoelectric cell and the resulting current i amplified and measured. Because of difficultie involved in the amplification of direct current a 400 cycle chopper is introduced into the opt cal system so that light is interrupted at a fre quency much greater than any to be encountered in density variations of the film, traveling at scanning speed used in the instrument. The carrier is amplified, rectified, and resulting direccurrent, which is proportional to transmission the sample, actuates an oscillograph,

Since output is controlled by the transmissic of sound track under study, and since recoring speed is much greater than analyzer speed record is a much elongated and amplified var able area record of original track. Sufficient energy is available to give a deflection of or inch, making possible measurement of sma modulations as well as small changes in densit

Inasmuch as a 1/4 mil slit is employed, the no appreciable slit correction needed up 10,000 cycles, and since only 400 cycles is passe by the amplifier system needs no frequency co

Approximately 20 per cent to 30 per cent frequency on calibrating print is ru through microdensitometer, portions being chose which the VI shows to be the most constalevel, and average of the modulation on the microdensitometer record is used as a basis for calculating electrical film level of that fr.

Inasmuch as microdensitometer sees very sma changes in the output of film, it is necessary take a great number of measurements in ord to arrive at a good average.

Another method which we have successful used is to rapidly wind the film over the scal thus averaging the modulation on the micr densitometer record.

The film can then be rated on an absolu basis without regard to a reproducing syste The level of a film 100 per cent modulated as having a peak transmission of 100 per cent used as a reference level, that is, \triangle T'. change in transmission is 100 per cent.

The densitometric level is then equal to

densitometric level is then equal to
$$20 \log \frac{K \triangle T}{K \triangle T'} = -40 + 20 \log \triangle T$$

where \triangle T is the change in transmission of a cycle in the test track.

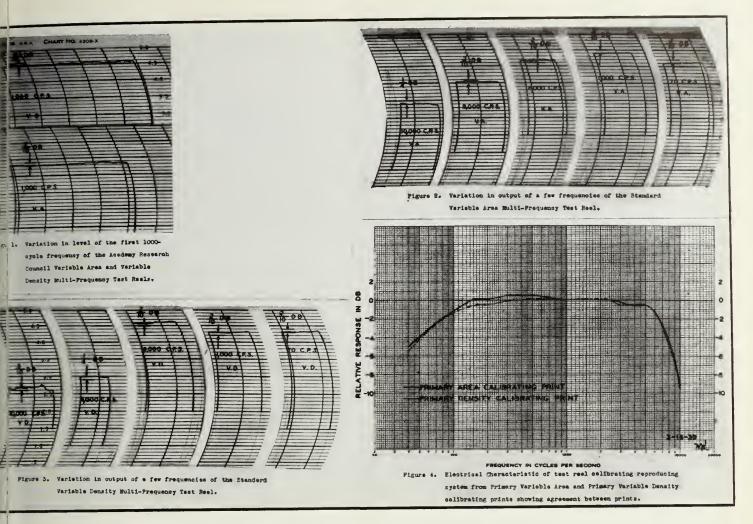
In order to use this film to determine ga in reproducing systems in terms of this film, electrical film level is supplied with each pri-This level is obtained by the same method us to determine the electrical film level of the ER ED-20 test film. For this reason, a cross calib tion between any ED-20 film and our Standa Multi-Frequency Test Reels can be easily (tained by noting the difference in levels.

This electrical film level is expressed in ter of the level produced by this film with respond to 6 milliwatts at the output of some stands photocell pick-up system. In case of ED reel this system was an average 3A cell a 10 megohms internal impedance working into 10 megohm load. The illumination is suppli by an average 8½-volt, 4-ampere exciter lat The illumination is suppli operated at 3.7 volts through a lens system hi ing an optical transmission equal to the ER KS-6470 lens tube assembly corrected for ze slit width.

Set-up described above experimentally yiel a level of 37.8 db less than densitometric le obtained from formula given above.

Hence electrical film level in db is equal $40 + 20 \log \triangle T = 37.8 = -77.8 + 20 1$

All frequencies are rated in terms of 10 cycle level and the "deviation from 1000 cyclevel" for each of other frequencies, with t signs of all values reversed, are given as c



econ factors for testing. Corrections are used at than deviations in output level so as to form with field use when direct addition is in making out field test reports.

r example, if a test film has an output level of lower at 8000 cycles than at 1000, it is sary to add 3 db to the output level to compete at for this loss. Correction factor for under this condition would then be given to 3db and sign of correction factor is thereforeversed in sign from the true characters of the film.

ter the microdensitometer or electrical film of this calibrating print has been establised, individual prints are calibrated by company each print with this calibrating print is sound reproducing system. We have been loying a conventional theatre sound head a particularly steady film movement used in onjunction with an amplifier working into the continuous level recorder. This continuous level recorder, and by comparing the graphs to the one secured from the calibring print, electrical film level at each frequery of the reel being calibrated is found, as from these values are found correction fac-

recording these frequency reel negatives, ral practical problems were encountered.

ariable area negatives are recorded at 50 per comodulation throughout the frequency range, where in case of the density negatives rise of the valve is alowed to compensate for film leading up to within about 1 db of overload. Practifly, this means that modulation increases for 50 per cent at 1000 cycles to about 90 per cent at 6000 cycles. From this point on a lulation is controlled so that no overload is sent.

order that there should be no splices, and

consequently no flutter or printer troubles such as would be contributed by splices, negatives for all of our Multi-Frequency Reels are made in one piece. Thus, it is necessary for each frequency in the reel to to make an announcement, change the frequency, adjust the level and throw the keys from the microphone to the oscillator in less than three seconds.

After negatives have been made, next problem was that of printing. Tests on several types of printers were made for variation in level, flutter, and frequency response. It was found in general that a printer giving the best test on one of these factors did not necessarily give the best test on the others, and for this reason a printer giving the best level response with a minimum of flutter was chosen.

Test prints made on the non-slip printer indicated that the level response was considerably improved on the first and last frequencies on the reel by using long head and tail leaders.

It was also found that a slightly increased pressure between print and negative appreciably improved level response. It is possible to do this when printing sound-track-only, and at the present time all our prints are made in this manner.

In calibrating prints, reproducing equipment must necessarily be carefully checked for overload, scanning, focusing, hum, and voltage regulation, and in addition each print must be checked for track placement.

After the above problems had been solved, a Variable Area and Variable Density Secondary Standard print was sent to each studio participating in Council program. These prints were carefully checked in each studio and compared to test reels already in use, and it was found that these Research Council Standard Multi-Frequency Reels agreed with those already in use and that most deviations which were present could be traced to deficiencies in the other reels.

Figures 1, 2, and 3 show the level response of our Variable Density and Variable Area calibrating reels. Figure 1 shows the response of the first 1000 cycle tone on these reels from which it should be noted that the variation is a maximum of less than 2/10 of 1 db.

Figure 2 shows the response of several frequencies of a variable area reel and it should again be noted that variation is very small. However, gain at these high frequencies has been increased and frequency of reel is not of this order. This particular figure has been prepared in this way for purpose of showing level response at these high frequencies at a point on the graph where the scale is large.

Figure 3 illustrates level response on density calibrating reel, with the particular frequencies illustrated shown on graph. Vertical scale shows amount of variation in level response.

Figure 4 shows Electrical Characteristic of our Test Reel calibrating reproducing system. Full line is characteristic as given by Primary Variable Area Multi-Frequency Reel Calibrating Print and broken line is characteristic as given by Primary Variable Density Multi-Frequency Calibrating Print.

It should be pointed out that the vertical scale giving the relative response of the system is somewhat exaggerated. Normally the division given here as 2 db is 5 db. However, this scale has been used to illustrate difference in response on the same system of our two Primary Calibrating Prints.

Maximum deviation between the two prints appears between 150 and 300 cycles and is a maximum of 0.6 of 1 db at this point.

Our experience in checking all types of different test reels indicates that this agreement is well within present practice in the measurement of electrical characteristics of reproducing equipment.

(To Be Concluded in July Issue)













"MAN IN THE IRON MASK"

LATEST swash-buckling historical drama from the production unit of Edward Small for United Artists release is "The Man in the Iron Mask," based on Alexander Dumas' popular sequel to "The Three Musketeers." Both these adventure classics were made as

starring vehicles by Douglas Fairbanks. Small's new treatmetakes emphasis away from D'Artagnan, played by Warren W liam in the new version, and builds the story around Louis He ward, as the "Man in the Iron Mask," and Joan Bennett as the beautiful Marie Therese. These striking stills, photographed William Wallace, stillman member of Local 659, IATSE, for the exploitation series on the production, hit the dramatic and phorial highlights of the lavish production from the opening













own to them is the twin brother of the King of France, resist King's tax collectors, with their resultant arrest, the intrigu5 minister's recognition of the youth, which sets of the plot d counter-plot of the familiar classic yarn on to its romantic max. Because of present rumors and reports about the use doubles by prominent actors in Europe's current game of

STILLS by WILLIAM WALLACE

power politics, the Small production takes on unusual topical significance. Note the forceful way in which the iron mask itself, around which the story revolves, is dramatically treated, as indicated by these stills pictures.

EQUIPMENT WAR

Current price cuts now being announced by the major sound equipment manufacturers along with a renewal of legal actions over various disputed points regarding patent powers, are seen by some trade insiders as presaging a new period of conflict in this field. It is no secret that sales of theatre equipment installations are not running up to expectations, in view of the crying need for modernization of much equipment throughout the country.

One reported reason for slowness of theatre operators to respond to obvious needs for modernization is the patent situation. Many important patents involving sound are nearing early expiration dates (within the next few years) and theatre operators are reported waiting the more favorable prospect of wide open competition in the field.

A number of the smaller equipment organizations are busy laying the ground work for future expansion plans. Although many contacts are being made and much under-cover experimentation going on, it is difficult to get any open information on future plans from executives of any of the companies.

Meanwhile, a price war already is under way wih RCA and International Projector already announcing reductions, with the expectation that other organizations will join in line to meet the competition.

Whatever trend the situation takes it should provide a considerable amount of interesting news for projectionists, since the ammunition of such economic warfare is usually a combination of price reductions and drastic improvements in equipment and service.

super studio

FOR THE FIRST time in the history of the industry any and all craftsmen with progressive ideas in studio design and equipment will have their viewpoint considered in the creation of a modern motion picture studio. Suggestions of all kinds will be welcomed by Paramount, states T. Keith Glennan, for their proposed new \$20,000,000 studio.

We think it is a swell opportunity for bringing to the fore the latest and best ideas for a modern super-efficient motion picture studio operation, and we believe that Paramount will be flooded with worthwhile tips from studio technicians. Such a cooperative spirit deserves the proper publicity and it is our intention to present in International Photographer newsworthy aspects of this progressive slant by a major company.

George M. Haines, member of Local 37, IATSE. and a contributing editor of International Photographer, who is now busy in presenting outstanding grip equipment of the various lots in laying the groundwork for his Studio Mechanic's Handbook, will handle this news.

Haines has been appointed by Glennan and Clarence Slater ,head of the Paramount grip department to the committee on grip equipment, which includes Slater as chairman, Jack Humphreys, A. J. Carpenter, Andy Durkus, Lonnie Aton and Walter McLeod. Other committees and their chairmen are: Office and Dressing Rooms: A. B. Hilton: Stage: Frank Caffey; Utilities: Jack Humphreys; Safety, Insurance and Fire Protection: Bixby Smith; Material Handling and Stockroom: M. A. Alexander. Other committees will be announced later.

Any communications to Paramount or to In-TERNATIONAL PHOTOGRAPHER should be typed and signed to insure proper credit being given.







Lothrop Worth, photographed for Close ups by Hal McAlpin, Local 659, IATSE.

CLOSE-UPS

Lothrop Worth: typical assistant cameraman.

HEXECUTIVE BOARD of International Photograhe, Local 659, seems to consist of a number forthy technical gentlemen with almost idenprofessional histories. They came to Los es while, quite young, studied in the Los les high schools, went to a western uni-ry, were around the studios as youngsters, d a job through one or another "breaks," ed the ropes in the lab, and graduated professional motion picture photography by llg slow process of improvement, study, hard and gradual promotion. Not a very flighty No exception is Lothrop Worth, typical ant cameraman.

r newest Close-ups subject has a record similar to Guy Bennett, operative camera-who was X-rayed in the May issue. This en less than coincidental, since Bennett Worth have been working as a team for years now with first cameraman Ted Sparat Paramount. Sparkuhl photographed Lubitsch pictures in Germany and was ght to this country hy the man with the Like many another director of phophy he acquired a favorite crew, of which ett and Worth are the kingpins. informed craftsmen, they work smoothly with kuhl, who makes photography a hobby as as a profession.

st as Bennett, the operative cameraman, has emendously vital job in keeping action well posed during shooting, Worth has a similar assignment, one to which any assistant bring steady nerves and rapid-fire judg-He has to keep the picture in focus, so simply described job is one that Worth other expert assistant cameramen consider most important creative contribution of their t to advanced photographic technique. For ite the many duties and need for judgment amera and accessory manipulation by the stant, the problem of focus goes beyond any nical and manipulative skill into the field of ha and action.

ne modern technique of direction, lighting, on and editing imposes strains upon the techl limitations of lenses, emulsions and labory processing that would frequently result in erous effects did not the assistant stand as eator of practical compromises between the ands of dramatic action and the limitations he camera. In an hour of interesting dis-ion with Worth I learned more about some the basic problems of motion picture pro-tion than I have learned in years of talk i directors, executives, writers, critics, and r experts ahout the theories of production.

lany of the opinionated and dogmatic soed creative element of the production maie, could well profit from similar discussion questioning of the scores of intelligent and wmanly technicians who do their jobs withfuss or gab. In this connection the director ns most free from criticism. Watch a sucsful modern director on the set and you will ost certainly find that he depends greatly n the judgment of operative camerinan and

stant in devising his action,

simple illustration from many cited by rth will explain why. Suppose two characare about twenty feet apart in a room. camera is shooting in from a window. One racter is looking out the window. The other eated, reading, more than twenty feet away. aracter at the window sees something and dly yells an important line of dialogue. Almost immediately the other character replies with an equally important line. Supposing that the positions were absolutely imperative to the action, if this scene were photographed in one focus, either the first or second speaker would be a blur. His dialogue would be coming from a vague person whose acting reactions might not even be visible plainly,

Working from a script, and also incorporating his own ideas with the ability and personality of the actors, the director constantly is called upon to solve such problems in order to achieve new and effective handling of scenes. The prob-lem cited above and many similar are solved by having the first actor properly focused for his line, which is followed by a split second turn or gesture, during which the assistant must switch the focus to the second character by the time he is ready to answer. Such trickery is accomplished in scores of scenes without the audience being in the least bit aware that a sure hand, acting with perfect precision and upon carefully pre-arranged plan based on accurate computation, has preserved the photographic effectiveness of the scene,

In addition to this creative contribution, the assistant has many other responsibilities. He receives the film from the loader and handles the actual camera and magazines, is responsible for all technical angles in their manipulation, plus much figuring, particularly on many scenes where a compromise hetween two desirable focus points must be made. Accurate checkup on filters and other accessories so that they always are immediately available, development of hand tests on the set, proper marking of exposed inagazines, movement of cameras and equipment, both on the set and on location, making out reports of great importance in the complicated history film from loading room to preview print, handling of the scene number slates, minor repairs and cleaning of the equipment as well as follow-ups on machine shop work all are part of the assistant cameraman's manifold duties.

So much progress has been made by assistant cameramen under the increasingly elastic technique that has resulted from restoring the camera to much of its mobility of silent days, that the editors of International Photographer have been for several months in preparation on a symposium series detailing the duties and detailed technical phases of the assistant's work. This will be illustrated by a series of layouts of the many able and unsung colleagues of Lothrop Worth who contribute so much to modern screen entertainment. Hence, readers of INTERNATIONAL PHOTOGRAPHER can expect in early issues more complete information on this important craft than could be presented in this limited space, so we'll return to assistant cameraman Worth as a person rather than a type.

Born in Melrose, Mass., Worth came to Los Angeles as a youngster, grew up in the pioneer days of the industry, graduated from Manual Arts High School and attended University of Southern California. He played football at Manual Arts with the famed Blewett brothers of California Golden Bear teams, but a broken leg cut short his gridiron aspiration. Possessing a fine tenor voice, he turned to singing and won featured roles in school operettas. He continued with serious musical study and when forced to leave college following the sudden death of his father he put his excellent musical education to practical use by landing a job in the music department of Bullock's Los Angeles department A long-standing family friendship with the DeMille family resulted in his first chance at motion picture work in a humble laboratory

Worth went to work on the old Pathe lot in Colver City, then known as the DeMille studios, during the time when "C. B." was making his famed "King of Kings," and he stayed with the company, working up gradually to loading and finally to assisting, when the DeMille company disbanded after the production of "The Godless Girl" in 1929.

The then new sound intrigued Worth and he entered this field, a decision he now regrets, for in the time spent following the will-o'-the-wisp of a branch of the business he eventually decided he did not prefer, there were many changes taking place in camera technique. When he finally decided to return to photography, he found it a long hard pull to re-orient himself. The happygo-lucky silent days were over and awesome "H. and D." curves and all the other complications that sound brought had tightened things

His determination to stick to his favored pro fession is proved by the fact that he turned down a mixer assignment with Edmund Goulding. with whom he had worked at Pathe on "The Trespasser," who had come over to Paramount to direct one of his own stories, on the day that Worth got his re-entering wedge into photography in a minor assignment at much less salary than

Goulding suggested.

Since that time, Paramount has been his home lot, where now his first employer, C. B. DeMille, is an ace producer-director. Since teaming up with Bennett in Sparkuhl's crew he has earned recognition by merit and hard work as an outstandingly able assistant cameraman. An early member of Local 659, he was elected to the executive hoard last fall.

An accomplished craftsman through long and hard apprenticeship, Worth is typical of the men in his particular branch of photography, in that he is quick to point out that any abilities or special skill he may be credited with is just part of what all assistants consider "doing the job well." Long experience in working together has given the assistant cameramen a pretty accurate estimate of each other's abilities. sonalities excluded, they reflect less professional jealousy than almost any group of skilled craftsmen or creators in this highly competitive industry. They'll all give the other fellow credit for producing if he has "it on the ball."

It is this realistic viewpoint toward personal relations-which play so much more vital a part in motion picture production than is realizedcombined with their confident mastery of a hewildering array of lenses and other camera accessories, that makes the assistant such an important pivot-man in the production team. Men like Worth have to have healthy nerves and a sane viewpoint about the other fellow's problems. If they didn't the nerve-wracking pace of concentration in the midst of complicated technical activities would quickly produce a new addition to Hollywood's famed array of "nervous breakdowns.

Conversation with Worth and other able assistant cameramen members of Local 659 reflects an attitude that perhaps they work by some unvoiced motto such as: "Do your job well and worry about the other fellow's, too—but don't worry about the other fellow!"—Gib.



From high in the Hollywood hills, Art Marion, Local 659, IATSE, made these striking shots of Los Angeles and Hollywood Dam



SOMETIMES THEY MUST STAND STILL!

ide excursion into argument over stillman's problems and functions presents little-known information on photoraphic duties of studio still cameramen outside their commonly accepted role as recorders of exploitation shots.

By ART MARION

OW THAT the trade press and Hollywood corspondents are waking up to the problems betting the studio stillman as a result of the exellent blasting job done on the situation by ohn LeRoy Johnston and Jimmy Doolittle in cent issues of International Photographer. aybe there are some other angles of the stillan's daily routine that might prove interesting r discussion.

John and Jimmy certainly did a fine job of -stating the importance to all concerned in ovie production of the still pictures made for ublicity and exploitation purposes. The best rature of their attack was the good humor ith which they cracked the verbal shillalagh a various heads. I think most serious and conructive minded still photographers will agree ith me that if the pair have really awakened ome of our industry leading lights to the need or giving the stillman some cooperation, we

don't mind the instances where the boys nudged

us a bit sharply—in fact, we appreciate that too. However, one thing that is frequently overlooked is that the photographing of exploitational and publicity shots is only one phase of the average studio stillman's routine. He has many other assignments. Peculiarly enough, it is on these that he usually gets plenty of cooperation— "they sometimes must stand still"—for these assignments would result in worthless negatives if cooperation weren't forthcoming.

Consider the many angles of actual production and behind the scenes activity where the still camera is invaluable. The still photographer must be able to handle many types of inserts for actual production: telegrams, photographs. copies of paintings, documents, reduction of portraits to miniatures, etc. Frequently it is advisable to "cheat" a copy in one of a number of ways so that the photograph will reproduce more effectively on the screen than if the original had been recorded by the motion picture camera.

In this connection, there has been an increasing trend toward use of the stillman as a pro-tection factor in making stereoptican "plates" for rear projection. Needle-sharp negatives of key scenes from a location trip may well save an important situation that didn't click in the location shooting but can be re-taken in Hollywood with the background projector.

Such photography requires considerable more mastery of the medium than the mere bulb-pressing attributed as the stillman's sole worry by many uninformed persons both inside and outside the studios. The accompanying illusoutside the studios. The accompanying illustrations would hardly be submitted to an editor as hot news subjects. Attention to composition and holding the scene from the Hollywood hills above the Hollywood dam across the plain of Los Angeles to the hills that fringe Inglewood

and Culver City in good focus certainly failed to produce any newsworthy augle that might contribute to the exploitation of anything except that Southern California scenery is impressive. But for the art director, who might have to devise a miniature, create a fictitious painting of important story value, or for stereoptican rear projection, they could be highly important.

I can remember being assigned by Paramount to make 61 shots from all angles of a schooner at Catalina Island location. Not a print reached the publicity department. From these shots the technical experts who work behind the scenes created a studio replica of the schooner above water-line, with cabins, fittings, etc., so well matched that studio scenes made on the set fitted perfectly with the location stuff for "Ebbtide"—in Technicolor.

Consider the intricate jobs of make-up, hair-dressing, complicated sets that must be dressed the next morning exactly as left the night before, and so an through hundreds of possibilities, with the still picture as an unsung saver of time and preserver of accuracy. Suppose there's a lunch call in the midst of a complicated scene—a dead body on the floor. What more sure and simple means of resuming the scene exactly as left off than to set the still camera firmly and pencil the exact position of the "dead body" on the ground glass with wax pencil? This trick has many variations.

Pictures with important outdoor location sequences often present many exits or entrances shot on location, with the character walking through a door or other entry-way and the other side of that door being photographed later on a Hollywood set. Careful still records insure natural and realistic timing of actor and setting in such scenes.

Sets must be photographically recorded with accurate perspective and full detail so that if some unforeseen story trouble occurs after they have been struck, they can be reproduced. Suppose 500 feet of swell dramatic scenes contain a prominent broken platter of important story value. It later develops a vital retake must be made. The broken platter has to be replaced exactly as it was before. The protective offices of the stillman can save much confusion and expense.

Many veteran studio workers do not know that the major studios make very complete photographic inventories of all equipment, sometimes twice a year, and for some departments oftener than that. Anybody who has strolled a big lot has seen doors, doors and doors, windows, plaster work, steps, pillars, statues stored together in huge collections. There is a very fine photographic inventory of all that stuff that seems to be just standing about to go to ruin, always available and frequently used by studio art and construction departments.

Historical sites, current sites, authentic data and detail from Hollywood to Timbuctoo, from a box seat at the Rose Bowl to unique huttons on a Civil War uniform, all are material for the photographic inventory, the photographic research material, for stereoptican plates and for hundreds of scarcely believable uses. One major studio, MGM, makes over 1000 pictures a year, merely inventorying buildings on the lot—every three months.

Before any studio stillman noses into a scene to plead with somebody to "hold it for a still," the still cameras have clicked off hundreds of negatives that have played their part in contributing to the scene that he will snap.

In putting down these notes, so many ramifications of the subject came up, that Herb Aller and Ed Gibbons decided to draft the old warhorse for a series of articles exploring the subject more thoroughly. Technical details of this type of work, which so frequently must be done without any great array of equipment, should prove interesting and informative to many readers of International Photographer. However, we don't believe this should be a one man job, so with another salute to John and Jimmy, we're hereby asking that any member of Local 659 with interesting angles to contribute to this discussion, please communicate with us through the International Photographer office.

NEW SHIFT MODERNIZES B & H CAMERA

Roy Vaughan of Art Reeves' Hollywood Camera Supply Company redesigns Bell & Howell camera to overcome cumbersome focusing method; no increase in weight, number of new convenient features; versatile job for bi-pack color.

The Bell & Howell studio camera was without doubt one of the most successful motion picture cameras ever made. The original design was created some 29 years ago, yet for durability and accurate registration the Bell & Howell movement is still considered unsurpassed. Throughout the world many of these cameras are still in daily use, making process background shots, serving as optical printers, and on commercial and studio production. Virtually the only important criticism ever levelled at this camera was that, in comparison to more recent designs, its method of focusing was cumbersome.

This shortcoming has been eliminated by a new sliding focusing shift development by Roy Vaughan of Art Reeves' Camera Supply Company, of Hollywood. Without altering the essential mechanism of the Bell & Howell camerahead (Fig. 1), this device provides the user of a Bell & Howell with a modern, quickaction shift for visual focusing. It may be fitted to any standard Bell & Howell camera.

In applying this shift, the original ground glass focusing screen is removed to a tube fitted to the original camera door. The camera box is cut down to the rectangular box that houses the mechanism; the rear half of the semicircular shutter-housing also remains. The shutter itself is greatly lightened, and reduced to less than half its original thickness.

A new base-plate is fitted below the camerabox, and a completely new, L-shaped assembly including a sub-base and an upright frontplate added. This front-plate carries the original Bell & Howell four-lens turret.

The camera-box slides from focusing to shooting position along three dove-tailed rails of hardened steel, seen in Fig. 3. One of these is located at the rear of the base-plate, and the other two above and below the aperture in the new front-plate. These rails provide a smooth, accurate bearing surface for the shifting movement.

Operation of the shift is controlled by a lever which protrudes from the rear of the camera between the base-plate and the bottom of the original camera-box (see Fig. 7). Constructed of spring steel, it automatically snaps upward into locking slots which rigidly lock the head in correct alignment for focusing or shooting, as the case may be; shifting requires that the lever be depressed to clear these locks.

The focusing magnifier is incorporated in a tube cast integrally with the new door to the camera-box. Following conventional practice, it has an aperture fitted with a ground glass focusing screen mounted precisely in the focal plane. At the opposite end is the ocular of the magnifying system, which re-inverts the image so that it is right-side up and correct as to left and right. The optics of the magnifying system are of special design and construction, covering the full aperture excellently, and affording a five-power magnification.

This setup, according to designer Vaughan, represents the most satisfactory combination between the low-power and high-power magnifications conventionally employed, and eliminates the confusion which so frequently occurs when the cameraman wishes to use the high-power magnification, which does not as a rule show the full field, for critical focusing, while the director wishes to check the action through the camera, necessarily demanding a change to low power magnification in order to see the full field of the shot. In the interests of compactness, the ocular or eyepiece of the magnifying focusing system can be telescoped when not in use. This is done by pressing a convenient catch and presing the tube forward until it locks in the closed position. In opening, it locks automatically in correct adjustment.

Two independent types of viewfinder may be used with this conversion, according to individual preference. When the camera-head is in photographing position, the magnifying optical system is slid to the left as the camera aperture is brought back into place behind the lens.

In this position, the magnifying system is protected by a rectangular extension of the new front-plate of the camera. This cover-plate may be pierced to accept a lens covering the same angle as the camera-lens, as in Figs. 5 and 6, so that the focusing system may then be used as a matched finder, the image in which is right-side up and laterally correct. Finder mattes may be used to coordinate this field with that of lenses of any focal length, or auxiliary finder-lenses may be used. In the latter case the full aperture of the ground glass is always used, giving a proportionately larger image than in cases where mattes are employed.

Where a conventional type of finder is preferred (Figs. 1, 2 and 3), the regular finder-mounting keyway from the original door of the camera is removed and replaced on the end of the block capping the magnifying system. The conventional finder may then be mounted in this keyway, though of course finder parallax is increased.

As the front of the original turret remains unchanged, the original Bell & Howell lens mounts may be retained, though recalibration is necessary, or studio-type follow-focus mounts may be substituted. In either event, lenses of any focal length may be used, though when lenses of 35 mm focus or less are used, the turret cannot be rotated until the lenses are screwed forward to clear the opening in the front-board. The focusing shift, however, may be used freely at all times, with all lenses.

Compensating focus for bi-pack color photography (Fig. 4) is accomplished by an interchangeable collar, .005 inch thicker than the one used for black-and-white, behind the ground glass. This change can be made in 2½ minutes with no tools other than a screwdriver.

Since this conversion affects only the camera housing, no changes need be made in any part of the actual camera-mechanism other than, as mentioned, reducing the thickness of the shutter. The automatic dissolving shutter is retained intact, and any type of movement (Fig. 1), in-

TRIPLE SUCCESS

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EASTMAN

PLUS-X

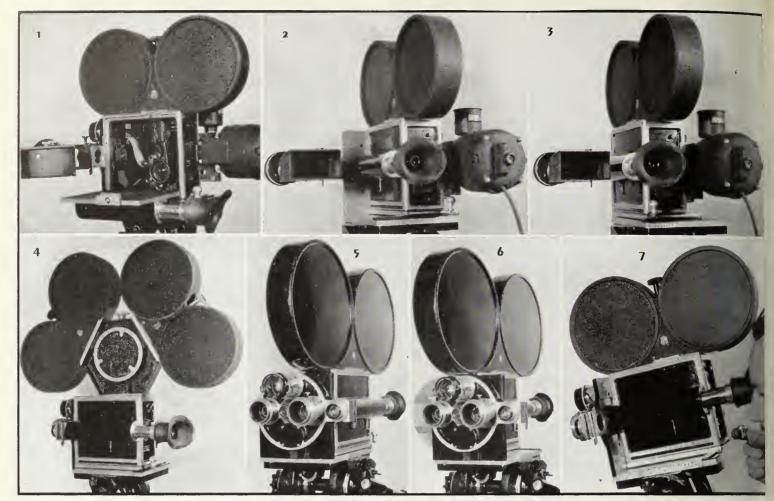
SUPER-XX

for general studio use

for all difficult shots

BACKGROUND-X

for backgrounds and general exterior work



Seven effective shots of remodelled B&H camera described in accompanying story.

cluding the standard pilot-pin movement, the "high-speed" check-pawl movement, or any type of silenced movement may be used. It may be remarked that in making this conversion Vanghan points out that wherever possible the original parts of the camera are retained, not only in the interests of economy, but also because of the exceptionaly high quality of materials and workmanship used in the original construction of the camera.

Adapting the Bell & Howell camera to this type of sliding focusing shift makes it necessary to use a flat-topped tripodliead in place of the original Bell & Howell dovetailed keyand-slot head. This is done very simply by replacing the original head of the Bell & Howell friction-head with a flat-topped casting which is bolted rigidly in place.

The lever-operated shift used in the Camera Supply Company conversion, Vaughan states, has been found particularly convenient when the cameras are used in soundproof bags or "barneys," as there is nothing in the shifting mechanism to become tangled with the fabric, and the head locks automatically into either focusing or photographing positions, so that the shift can be accomplished easily by touch alone.

To date, this conversion has been applied to several of the Bell & Howell cameras used in the Camera Supply Company's rental service. So popular has it proved that the remainder the Bell & Howells in this rental service are being converted. In addition, sufficient parts are being processed to permit the conversion of individually-owned cameras at a reasonable price. It is expected that the conversion will find favor not only for the many Bell & Howells used for background filming by studios, but also among those used both in and out of Hollywood for studio, commercial and newsreel camera work. In the latter service, several local newsreel cameramen have acclaimed the value of this quick-action shift combined with the matchedlens type of finder for their coverage of news events, sports, and the like.

REAR PROJECTIOM STANDARDS

Final installment of complete text of industry's first thorough minimum standards agreement for rear projection equipment.

This is the third and final installment of the industry's first detailed report on minimum standards for rear projection equipment, prepared by special committee of Academy Research Council.

—En

HIGH SPEED PROJECTOR HEAD OPERATING SPEED OF PROJECTOR HEAD (Basic):

A high speed projector head shall be provided which will operate at a speed of 120 frames per second with perfect registration, giving a minimum amount of abrasion to the film. The high speed projector head shall fulfill the recommendations given under "Normal Speed Projector Head" with the exception that the noise level specification may be disregarded. However, additional specifications as given below must be met.

HIGH SPEED PROJECTOR HEAD FOR MINIATURES (Basic):

In the event that by substituting the High Speed Projector Head for the Normal Speed Projector Head, the above speed requirement cannot be adequately accomplished or reconciled with steadiness, it has been suggested that separate heads for high speed be developed. Special high-power motors will be required and shall be designed to adequately operate the projector at a speed of 120 frames per second.

SHUTTER CONTROL (Basic):

A positive synchronizing shutter system shall be provided to eliminate the possibility of shutter slippage. (See "Synchronizing," Page 16.)

PART VIII

NOISE LEVEL MAXIMUM NOISE LEVEL (Basic):

Considering noise measurements made a 45° positions about the projector and at a distance of 6 feet from the projector, using a meter which employs a 40 db ear loud ness weighing characteristic and calibrate with respect to the standard reference noise level of 10^{-16} watts per square centimeter the maximum allowable noise level from the whole equipment shall be 34 db.

PART IX

THE TRANSLUCENT SCREEN BASE COMPOSITION (Basic):

All screens shall be made with a SAFETY TYPE base—cellulose acetate or an equivalent comparable to clear base acetate film—this base to be of such quality that no discernible color change is noticeable over a two-year operation period. When a diffusion surface is applied to the base, this surface should be readily removable so that the screen may be easily refinished in the event the surface is damaged.



MASTERY... In these two truly great 16 mm. films—Ciné-Kodak Super-X and Ciné-Kodak Super-XX—the modern movie maker has mastery of every movie opportunity. There's a new richness in black-and-white quality in these films, a new sparkle and clarity. Super-X, intended primarily for outdoor work, has unprecedented brilliance, fineness of grain, and beauty of tone quality. It has speed, too, fully equal to that of the famous "SS" Pan.

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Put a supply of each of these films in your movie kit. Rest assured, then, that you're in command of every filming opportunity that comes along.

Ciné-Kodak Super-X and Ciné-Kodak Super-XX are both available in all standard 16 mm. lengths—200-ft. rolls (from Rochester only), 100-ft. rolls, 50-ft. magazines, and 50-ft. rolls.

EASTMAN KODAK COMPANY, ROCHESTER, N. Y.

LIGHT TRANSMISSION, FIELD, DEFINITION (Basic):

The screen, over its entire area, shall be so designed as to provide: (1) optimum transmission (see above paragraph) (2) optimum diffusion. diffraction, or refraction characteristics; (3) as flat a field as possible; and (4) uniform definition.

STANDARD SCREEN SIZES (Basic):

The Committee recommends that motion picture producing companies, manufacturers, and commercial organizations engaged in process and miniature work standardize upon the following screen sizes (specified as useable inside area, exclusive of binding):

PART X

SCREEN ILLUMINATION STANDARD METHOD OF MEASURING SCREEN ILLUMINATION (Basic):

The following method of measuring the amount of light falling on a screen is recommended: The full screen aperture of the projection machine is flashed with the shutter open and stationary. Nine readings of the light intensity are taken at different points on the projection side of the screenthe four corners, the middle of the top and bottom and the two sides and the exact center of the image. The measurements at the corners and edges are made by placing the center of the cell in from the edge 5 per cent of the total width and in from the top and bottom 5 per cent of the total height of the projected image. The exact height and width of the projected image is measured and the area of the image computed in square feet. The number of square feet of the image is multiplied by the average of the nine foot-candle readings. The result is the number of lumens delivered to the screen by the light and optical system in question.

TYPE OF METER (Basic):

It is recommend that the measurements of screen brightness be made with the Weston Foot-candle Meter, Model 603, with the cells filtered by means of the Weston Viscor filter which approximates the color sensitivity of the human eye.

CALIBRATION OF METERS (Basic):

It is recommended that all meters used in the measurement of screen brightness be calibrated at least twice a year against known standards. It is further recommended that this calibrating be done by an organization properly equipped and authorized by the Weston Laboratories to adjust and calibrate Weston Foot-candle Meters. (Note: The Weston Meter, Model 603, is recognized as Standard in Hollywood. Meters which do not have proper care and protection from rough handling may require calibration oftener than twice per year.)

MINIMUM LIGHT INTENSITY OF SCREEN

It has been suggested that the minimum intensity of illumination at the screen, considering the speed of the lens system used, be as follows: The minimum output of a conventional condenser system, using an F2.3 system be 12,000 lumens, an F2.0 relay type system, 16,000 lumens, and an F1.6 relay type system, 25,000 lumens.

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news of the month

Vrsatile new microphone gets trial at Paramount; Local 659 members aid television work of Don Lee; Air Corps 1) chieftain in Hollywood for study of studio methods; from crank to turntable is story of former member of 659.



1) Versatile New Mike

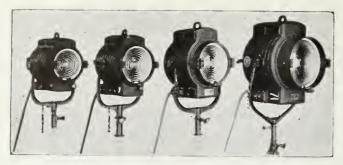
A revolutionary new type microphone is being used in motion picture production for the first time on Paramount's current Bing Crosby dicture, "The Star Maker." Known as the "Six-Phirty-Nine," it is a recent product of the Western Electric Laboratories and was flown to Hollywood for use in the production.

Shown in the accompanying illustration are Homer Tasker, studio engineering expert; Don McKay, soundman member of Local 695, IATSE; Shirley Ross and Loren L. Ryder, head of Paramount's sound department. Originally intended for use in recording the voice of Linda Ware, the new singing find appearing in the picture, whose vocal range is too great for ordinary mikes, it now promises to revolutionize the production methods for musical pictures.

Heretofore, singers appearing in pictures have recorded their vocalizing on recording stages and were later photographed singing in synchronization with their previously recorded sound track. This double effort has always been one of the major expenses of making musical pictures. Also singing in perfect synchronization with their previously recorded effort has always been difficult for the artist and a barrier to naturalness.

With this new mike this pre-recording will no longer be necessary. Singers can be recorded on the set while going through the action of the scene. This is made possible by the "directional" characteristic of the mike. It records only what it is pointed at and eliminates the complicated acoustical problems of sound stage recording.

The new mike also smooths the way for radio singers in screen words. In radio the "velocity" mike is used almost exclusively, while in motion picture work mikes are of the "pressure" type. These two types call for widely different vocal



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technique.

In the new "Six-Thirty-Nine" these two types. of mike are combined in one mike, which is, in fact, a twin mike and is completely adaptable to all vocal technique.

2) Television Research Cooperation

 Through the cooperation of Herbert Aller. business representative, and officers of Local 659, with executives of the Don Lee network, affiliated with the Mutual system, intensive teamwork between practical motion picture cameramen and television researchers is now under way as part of the first television agreement calling for the eventual employment of Local 659, IATSE, photographs in commercial television.

During the present experimental status of television, the entire membership of Local 659 will eventually put in several weeks time each in handling television cameras and lighting for the regular Don Lee telecasts over KHJ and experimental station W6XAO.

Present status of television is much similar to that of the early days of sound when there was a great gap between the technical and engineering phases and the practical showmanship aspects. From the standpoint of lighting, composition, handling of equipment, etc., which has been developed to such high efficiency in motion picture production, it is expected that the studio cameramen who are contributing their time to this program, will not only familiarize themselves with television procedure, but will also give the television research workers a much better type of scene to train their complicated equipment on for reproduction purposes than has usually been the case in the past.

Television technique of the future will telescope into several immediate and virtually simultaneous steps, the many operations between camera lens and photographic laboratory that now take place in present motion picture work. Gamma, density, contrast, focus, framing, etc., which are worked out between the photographic crew and the film laboratory, all will have their

television counterparts.

In preparation for early publication in INTERNATIONAL PHOTOGRAPHER is a detailed comparison of how this new technique will work. This will be supplemented by a symposium of practical ideas from the Local 659 members who are now cooperating in the present program with the Don Lee organization.

Shown in the accompanying illustration with two members of the Don Lee staff (at right) are three members of Local 659 handling the television camera for an insert close-up: Jaime Del Valle, with ear-phones; Lynwood Dunn, operating, and Cliff Stine.

3) Tobias Studies Studio Methods

● To Hollywood last month from Wright Field at Dayton, Ohio, came Chester L. Tobias, superintendent of the laboratory of the motion picture division of the U.S. Army Air Corps, for a sixty day intensive training period in latest motion picture lab procedure. His first visit is an extension of the Academy Research Council's long-range program of cooperating with the War Department in training Signal Corps officers in motion picture production methods. Currently in Hollywood for eight months study is Captain Dwight L. Mulkey. Many "grads" of the Academy "school" now are actively engaged in practical instruction work throughout the Signal Corps. Special training for Tobias, who is shown arriving in Los Angeles, was requested by Major General H. H. Arnold, Chief of the Air Corps, as part of the general drive to increase efficiency of the country's armed forces. Many reserve officers among the industry's technicians are playing their part in this program.

4) "Two Big Union Crews"

• From cranking cameras to spinning turn-tables as one of radio's first "night owl" announcers is the story of Jack Bell, former member of Local 659, IATSE, and also a member of Local

American Federation of Musicians. Seen Page 21 at right, Jack is behind an early B. & Howell with the Thalhammer iris, in st made in December of 1925, and at left in miern flash-bulb shot buried amidst mike, rerd files, turntables and script at Radio Sta-ti KFVD, Los Angeles. Late listeners in the Sthern California area are familiar with the "two big union crews to serve you" tl Jack-the-Bellboy program, sponsored by the Vtor Clothing Company, well-known Los Ang's credit clothing firm, which features 100 cent union made stock and full union staffs. Aive in photography during silent days, Bell was a member of the independent union that proceded the present photographers' charter from IATSE and MPMO. He pioneered "night o" programs featuring recordings and humorchatter in the early days of radio. His prese program is heard every night from 11 to

Biological Association Plans

Ninth annual convention of the Biological btographic Association will be held September 116, at the Mellon Institute for Industrial Resrch, Pittsburgh, Pa. The program will be interest to scientific photographers, scientists vo use photography as an aid in their work, tchers in the biological fields, technical ex-Its and serious amateurs. It will include dissions of motion picture and still photography, tomicrography, color and monochrome fils, pessing, etc., all in the field of scientific illustring. Up-to-date equipment will be shown in technical exhibit; and the Print Salon will play the work of many of the leading biolical photographers here and abroad.

The Biological Photographic Association was finded nine years ago because of the growing red for expert illustrative material for sciento research and teaching. Many workers were ving their problems in their own way, were sting time and effort in individually repeating periments that had been worked out elsewhere. e BPA was formed to act as a clearing house new ideas, to pool experiences, record standl procedures and disseminate information. Its as were scientific and all services have been unteered by officers and members on a nonofit basis.

The BPA Journel, published quarterly, a vole of about 250 pages, is furnished free to mbers. Membership privileges include an horitative question and answer service; also right to borrow loan albums and exhibits scientific prints for study and display.

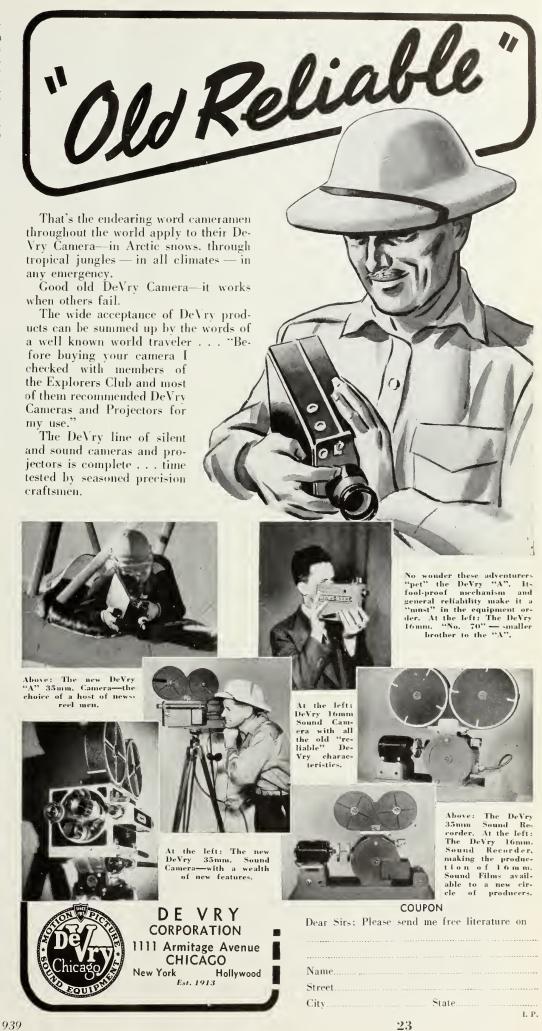
Further information about the Association and convention may be obtained by writing the cretary of the Biological Photographic Assotion, University Office, Magee Hospital, Pittsrgh, Pennsylvania.

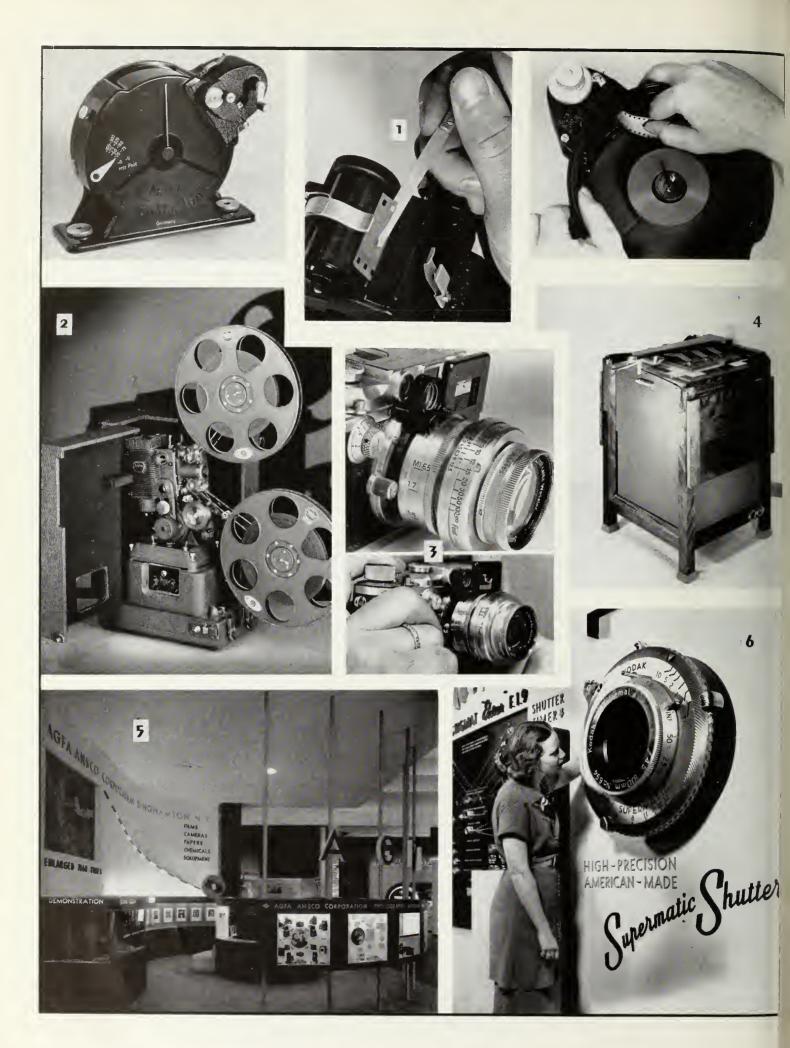
In Memoriam

It is with sincere sorrow and sympathy to their relatives that we publish the news of the passing of two veteran members of the Hollywood photographic fraternity within the past month.

Edwin L. Dyer, long-time member of Local 659, IATSE, and one of the true pioneers of industrial photography, passed away at his home in Sunland, California, May 23. He had been confined by illness for over a year.

Frank Good, a charter member of Local 659, IATSE, was stricken by a heart attack at his Hollywood home, April 3. An industry pioneer, having photographed for most of the major companies, his last assignment was on Paramount's "Spawn of the North."





TRADEWINDS

news of new products: Leitz Loader; blimped Amprosound; Minification scale; newly designed Graflex Crown prater; Agfa's N.Y. Fair exhibit; new Kodak Supermatic shutter; slide-viewer; Agfa Minipan; Victor Auimatophone.

1) Leitz Loading Tank

any users of miniature cameras prefer to use a 35mm film and load their own camera na zines, but because the sensitivity of modern in is so great making it necessary to work in in the darkness, they seldom make the attent. Loading of camera magazines in full larght is easily done with the newly introduced er Film-Tank, which accommodates a bulk at of 300 feet of 35mm film and permits camera lagazines to be loaded simply by turning a connently located crank. Because of the control of the tank, the film is safeguarded lagast scratching or fogging at all times so that hotographer (as can be noted from the illusins) will always get a perfect load of film fraction of the time it would take if he working in a darkroom. While the tank is defically constructed to accommodate Leica area magazines, the Contax magazines may be add with it as well. Full information on the leadevice may be obtained from E. Leitz, Inc., ifth Avenue. New York, N. Y.

2) New Amprosound Model

mpro Corporation last month announced a sound-proof blimp case for their sound-on-model U, which sells for \$345. The new Model U, which sells for \$345. The new mplifier output of 15 watts, undistorted, a 2-ch permanent magnet field speaker and 750-lamp, both the U and UB feature several ations, including speaker-hiss eliminator. The enables the operator to obtain full volume enables the operator to obtain full volume in the unity of the unity

3) Minification Scale

or making close-up photographs of small buts with the Leica camera and the Leitz Optical Short Distance Focusing Device, a new of enience is the addition of a minification of which permits the photographer to determine precisely the scale of reproduction of any at the may be photographing. The markings allustrated run from 1:6.5 to 1:17.5. Thus high photographer can determine in advance the run to which he wishes to make any reproduction of since the range finder permits accurate or sing there is no need for setting the equipality by means of calibrations or using a ruler of leasure the distance of the object from the plane. Full information on the Optical Short make Focusing Device may be obtained by the plane. Evillation of the Optical Short plane. Full information on the Optical Short on the Focusing Device may be obtained by the City.

4) New Graflex Printer

New No. 3 Crown Printer, recently and teed by the Folmer Graflex Corporation, comes a number of advanced features at modification. Diffused lighting is effected through use of a single opal glass bulb which in ses efficiency, decreases operating cost and segmentary is greater ease and convenience of operation. The sum of the paper, assuring flatness in-focus prints. Adjustable masking blades

Coburn's Pointers

Recent great improvements in still photography negative material available from the manufacturers offer the still photographer many new possibilities for better effects, greater speed, depth of focus and minimum graininess in enlargements. Experience of a veteran studio ace in careful experiments with the new materials will be detailed in a report from Bob Coburn, now under contract to Samuel Goldwyn. A member of the magazine subcommittee of the executive board of Local 659, Coburn is well-known for his meticulous attention to basic photographic materials and aversion for gadgetry of all sorts. His practical pointers on use of the new negative materials should be well worth reading.

are standard equipment and their unusual width enables small prints to be made on large size paper. They are easily and quickly removed by a turn of a finger, through a new and patented method of attachment. A new type positive light switch goes into operation only after the platen is pressed firmly on to the paper. Conversely, it turns off the light before the platen has released contact with the paper. A separate switch per mits the light to be operated independently from the platen.

the platen.

Cabinet of the new printer has been completely redesigned for greater ease and convenience of operation. A sliding panel in the front lowers to give access to the interior and to facilitate dodging. Also, three slots are provided on either side of the interior to permit the placement of the dodging shelf at three different distances from the negative and thus attain greater dodging control. And for those who desire to use a dodging lamp, a special outlet has been provided in the side of the printer.

5) Agfa Exhibit Draws Crowds

• Featuring a working demonstration of a photographic darkroom as one of the main features of its display at the New York World's Fair, the exhibit of Agfa Ansco Corporation is currently attracting large audiences. Also popular at the Agfa Ansco exhibit is the group of giant 6x9 foot enlargements from 35mm negatives, displayed in succession by a mechanical changing unit. Presented at the Agfa exhibit are two other displays of interest a dramatic showing of fine salon prints, both amateur and professional in character, and a collection of early American cameras that is a timely reminder that 1939 is the centennial of photography. The Agfa Anscoexhibit is located in the Communications Bldg.

6) Kodak Supermatic Shutter, No. 1

• New Kodak Supermatic Shutter No. 1, made in Kodak's precision workshops in Rochester, is a new between the-lens shutter advance in mechanical design and performance, accuracy, sturdiness, efficiency and calibration. Special lubricants developed by Kodak research enable the Supermatic Shutter to operate satisfactorily and consistently over a greater summer and winter temperature range than any other betweenthe-lens shutter.

The Supermatic (as illustrated) has a speed range of 1 to 1/400 second, and includes a delayed-action or self timing setting at all shutter speeds including 1/400 of a second, with a pause of about 12 to 15 seconds' duration. Shutter speeds which require the use of a tripod—time, bulb, 1, 1/2, 1/5, 1/10 second—are marked in red to warn the user of the necessity for a rigid support. The faster exposure speeds—1/25, 1/50, 1/100, 1/200, 1/400 second—are marked in black.

Speed setting is accomplished by turning a ring around the periphery of the shutter. The ring bears two index points, one for instantaneous speeds, and one for the longer exposure speeds. The shutter setting lever is located on the top of the shutter and the release lever is located on the left side. A third lever, on the right, which cannot be set until the shutter has been cocked, serves to set the delayed-action mechanism. A socket for a cable release is provided. The delay-action device, if set, is put into motion when the release lever is released in the usual way.

Extremely thin spring blades, held to fine assembly tolerance, close tightly over the aperture in order to obviate light leakage. Their lightness makes possible a high speed of 1/400 second. Other speeds down to one second are timed with a retard, consisting of a precision gear train and pallet escapement. The new shutter is at present available only on the Kodak Special Six-20. Other Kodaks will be fitted with it at a later date.

The model of the Supermatic illustrated is a huge one, 30 inches in diameter and weighing about 200 pounds, that is now on display at the impressive Kodak Building at the N. Y. World's Fair. A working model, it is automatically controlled so that visitors can see the actual operation of the new shutter.

Argus Salesmanager III

• V. A. Searles, who has directed Argus Camera sales and advertising since its introduction by the International Research Corporation, has resigned because of temporary ill health. Mr. Searles and daughter are in Florida where he expects to spend a month or two recuperating from his recent illness.

It is expected that Mr. Searles will return to Argus, taking over regional sales direction when he is fully recovered. Roy Walker, formerly with Bausch & Lomb, has replaced Searles in

directing Argus sales.

New Slide Viewer and Projector

● Candid Camera Corporation of America of Chicago, Ill., is announcing a new type combination film slide viewer and projector, for viewing all types of 2x2 mounted positives, Kodachromes, etc., provided with a ground glass viewing screen 6x6 inches in size. It is instantly converted from a viewer to a projector—providing a screen image five feet across in a 7½ ft. throw. Employing a 100-watt prefocus bulb in a specially designed double condenser system, ample light is secured to show an exceptionally brilliant image. A unique feature is the elimination of the conventional slip through slide carrier.

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The slide to be viewed or projected is dropped right side up in an aperture at the top of the machine-being automatically aligned in the optical axis of the unit. While slide No. 1 is being viewed, slide No. 2 is dropped into the aperture. When it is desired to view the second aperture. When it is desired to view the second slide a plunger is depresed which automatically ejects the first slide No. 1 and brings the next into viewing position. A built-in shutter eliminates flash of white light on the screen while slides are being changed. Focusing is instantly and accountable accountlished by means of and accurately accomplished by means of a high ratio lever adjustment. The unit is extremely compact and portable, measuring 12x8x7 inches.

Victor All-Purpose System

 New Victor Add-A-Unit Animatophone, just announced, makes it possible for educational and business institutions of al kinds to acquire 16 mm motion picture and sound equipment adaptable to all requirements with a new multiple-variation and multiple-use motion picture

projector and sound system. All units of the Victor Add-A-Unit Animatophone are interchangeable, and units may be added as desired. Starting with the small, compact, basic sound projector, which is complete in itself, an outfit of any size can be secured by adding auxiliary units.

The Victor Animatophone basic projector provides silent or sound motion pictures, microphone facilities and phonograph record amplification for an average size room, without addition of any equipment. Adding an amplifier and another larger size speaker furnishes ample sound motion picture or public address facilities for a large auditorium. Broadcasts, recordings and announcements may be relayed to as many rooms as desired, when the Central Radio P. A. Sound System unit is added. Other units may be added to make possible showing of sound pictures in one location, while public address or music amplification are being used in another. Detailed information about the new system may be secured by writing Victor Animatograph Corp., Davenport, Iowa.

Minipan Microcopying Film

 A new film for documentary recording, just announced by Agfa Ansco because of its excep tional high resolving power, is suited to biblio graphic and documentary recording requirin considerable minification. The new Agfa Minipa film provides proper balance of such factors a speed contrast, color sensitivity and halation protection. These factors have been adjusted to give a film of the greatest possible practicability, whil holding the resolving power at a maximum. The new film is capable of resolving up to 135 line per mm. (3400 lines per inch) according to pro cision of the recording equipment used.

Agfa Minipan is available in the followin standard units: 100 and 200 ft. rolls, 35 m unperforated, Darkroom Loading; 100 and 20 ft. rolls, 35 mm with single perforation, Darl room Loadnig; for Photorecord Camera: 100 f rolls, 35 mm. perforated or unperforated, Day light Loading, emulysion wound out, with leade and trailer.

Rolls of 100 and 200 ft. 35 mm perforated

lar oom loading, are stock items. Other lengths nucperforation types may require a few days lel. Information concerning non-standard collections, packings and perforations will be furis d upon request to Agfa Ansco Corporation, Bir amton, New York.

"Vaporating" in Hollywood

eerless-Vaporate film treatment which has bee offered by the Bell & Howell film labora-throughout the middle west for the last we ears, is now available also from the Hollyoc laboratory of the company. A complete a rating installation has been placed in the Re & Howell headquarters, 716 North La Brea vue. Same service and price schedule for hepreservation treating of films prevails as in higo and elsewhere throughout the country.

Chamberlain Promoted

fifford Chamberlain, member of Local 659, aspeen promoted from second cameraman at enicolor, to assistant to Bob Riley in an active capacity at the color organization. Thad Breks, also a member of Local 659, has been 10 d up from assistant cameraman to second place Chamberlain.

Press Speed Flash

till photographers interested in the new high pel flash synchronization will find the new art Press Speed Flash well worth investia g. The new model synchronizes either the rc (Compur Type shutter) or focal plane hers on Speed Graphics as desired. Focal le shutter synchronizer operates through same lerical circuit. Full technical data is readily viable from the Kalart company through either he New York or Hollywood offices. We also ulest that if you haven't received your copy Calart's new publication, Speed Flash Picture, write in for one immediately. Vol. 1, ldl is just off the press.

By ROBERT W. FULWIDER

MONTH the following patents of interest to eers of International Photographer were sed by the U. S. Patent Office. These selec-ics and brief descriptions of new patents were a rared by Robert W. Fulwider, well-known Angeles attorney, specializing in patent and mark counsel.

2,152,921—Apparatus for Making Motion CTURES. Willard C. Robinette, Pasadena. alif. Application Feb. 26, 1936. 3 Claims. evice for a motion picture camera which is ided with a number of background cells that be independently moved.

2,152,959—Projection Device. Otto C. Gilore, Van Nuys, Calif., assignor to Cosmolor Corp., N. Y. Application Jan. 27, 1936. 1 Claims.

evice for projecting pictures in color which es use of number of optical systems, each m having a rhomboidal erecting prism.
2,153,212—Composite Printing Apparatus

OR MOTION PICTURE FILM. Joseph H. Spray, utherford, N. J., assignor to United Research orp., Burbank, Calif. Application Feb. 18, 36. 6 Claims.

nethod of printing from two negatives, one ative having the picture images and the other having one frame of each of the various

2,153,376—FILM PROCESSING APPARATUS. Hayen B. Kline, Cleveland, Ohio, assignor to Inustrial Rayon Corp., Cleveland, Ohio. Appli-ation Nov. 1, 1937. 8 Claims.

levice for handling films during their pro-ing, the device moving the film in a helical

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No. 2,153,529 MECHANICAL SOUND RECORD IN FILM. John H. Rouse, Los Angeles, Calif., assignor to S. A. Sollie, Los Angeles, Calif. Application Sept. 6, 1935. 2 Claims.

A mechanical sound record in film, formed by pressing a stylus against the film while the latter is on a roller having resilient portions beneath the stylus.

No. 2,153,564—NATURAL COLOR CINEMATOGRA РНУ. Shirley B. Hunt, Birmingham, Ala. Ap-plication March 4, 1935. 2 Claims.

A color motion picture projector making use of a film having several strips of images on it. the projector exposing first an image on one

No. 2,153,810—FILM RACK AND HANDLING AP-PARATUS. Raymond C. Mercer, Los Angeles, Calif. Application Jan. 18, 1937. 12 Claims. A rectangular rack for handling film and having provision for winding the film on the rack, making an endless belt of it, and then moving the film as an endless belt.

No. 2,153,892—Double Camera. Fred W. Jack-

man, Beverly Hills, Calif., assignor to Warner Bros. Pictures, Inc. Application April 4 1936.

A light deflector for directing light rays from an object into cameras having optical axes in

the same plane.
No. 2,153,901—METHOD AND APPARATUS FOR PRO DUCING SWINGING DISSOLVE MOTION PICTURES William Thomas, Glendale, Calif., assignor to Warner Bros. Pictures, Inc. Application Jan

Warner Bros. Fletures, the April 13, 1936. 16 Claims.
A method of making dissolves in which the printing film is rotated about an axis in the

focal plane of the camera.
No. 2,153,902—Apparatus for Making Ani MATED CARTOONS. Albert W. Tondreau, Holly wood. Calif., assignor to Warner Bros. Pic tures, Inc. Application July 5, 1935. It Claims

A camera support having a vertical column or which a camera is vertically mounted, pointing towards a table on a second movable vertica

No. 2,154,374—Haze Meter. George M. Byram Asheville, N. C.; dedicated to the free us of the People in the Territory of the United States. Application Nov. 30, 1938. 2 Claims An instrument for measuring the amount of haze and having a fully reflecting mirror and a semi-reflecting, semi-transparent mirror with darkened wedge in front of the latter mirror. No. 2,154,809 - Motion Picture Apparatus. Robert E. DeKay, Los Angeles, Calif. Application July 13, 1936. 4 Claims.

A motion picture machine making use of a continuously moving film and having an oscillating

mirror for producing a stationary image.

No. 2,154,868—Screen for the Projection o
IMages in Relief. Anne Henri Jacques d
Lassus St. Genies, Versailles ,France. Applica
tion Sept. 19, 1936. In France Sept. 24, 1935 7 Claims.

A screen for producing the illusion of stered scopy by means of a system of lenticulations.

No. 2,154,898 METHOD OF AND APPARATUS FO COLOR PHOTOGRAPHY. Samuel B. Grimson, and

Leo Lipp ,assignors to Color Research Corp N. Y. Application April 2, 1937. 4 Claim A method of producing a black and white colo positive film from a lenticulated negative b masking the beam from the lenticulated film correspond to a red beam and a blue-green beam No. 2.155,075—Copying of Lenticular Film Moritz Adam, Berlin, Germany. Applicatio Aug. 18, 1937. In Germany Aug. 27, 1936

A device for making lenticular copies from ler ticular film by bringing the lenticulations of the

two films into register.

No. 2,155,511—APPARATUS FOR DEVELOPING PHO TOGRAPHIC PRINTS. Luther G. Simjian, New Haven, Conn. Application Nov. 16, 1936. 1

A device for developing photographic prints i which conveyor mechanism carries the print from one tank to another and immerses the prints in the different tanks.

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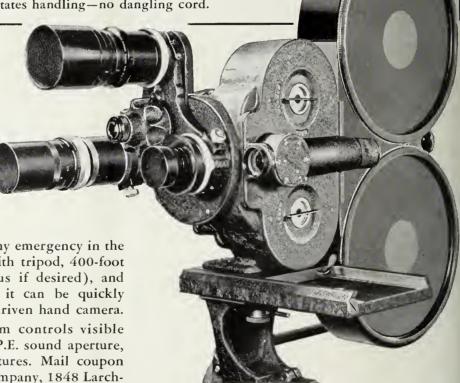
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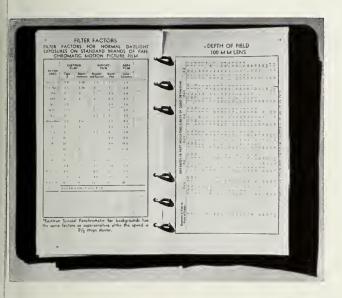
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INTERNATIONAL MOTIONAL PHOTOGRAPHER SALVEY

Vol. 11

July, 1939

No. 6

LEADING ARTICLES IN THIS ISSUE

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PICTORIAL FEATURES

Jascha Heifetz—Coburn, Pages 4-5 Action Stills Symposium, Pages 14-15

REGULAR DEPARTMENTS

Close-ups—on Ray Rennehan, Page 21 News of the Month, Page 19 Tradewinds, Page 23 Classified Directory, Page 22 Patents, Fulwider, Page 27

On the Cover

John Mack Brown, Universal star, who has proven a triple-threat man off the gridiron as well as on, snapped in a striking shot with his favorite mount, Wheezer, by Sherman Clark, stillman member of Local 659, IATSE. Brown has clicked in dramatic roles, western leads, and now is invading radio as star of a new CBS program, "Under Western Skies," heard on Fridays, from 4:00 to 4:30 P.M., P.S.T.

ditor, Ed Gibbons; Managing Editor, Herbert Aller; Art Editor, John Corydon Hill; Business Manager, Helen Boyce.

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Hailed by previewers as an outstanding musical production is Samuel Goldwyn's "They Shall Have Music," soon to be released. These striking shots are by Robert Coburn, ace stillman member of Local 659, IATSE. On this page, picture's star, the great violinist, Jascha Heifetz, in action shots; on opposite page,

Alfred Newman, Goldwyn's musical director, whose work on to picture was highly praised by the reviewers, with Heifetz at latter's accompanist, Emanual Bey. Story by Gerhardt Dormember of Local 47, American Federation of Musicians, is fur of series in International Photographer on new development of joint interest to photographers, sound technicians, musician

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EW ENTERTAINMENT POSSIBILITIES OPENED

Many new developments present opportunities for photographer, soundman and musician to cooperate for better tertainment; *International Photographer* starts new department to cover this news: Vocoder previewed in Hollywood

By GERHARDT DORN

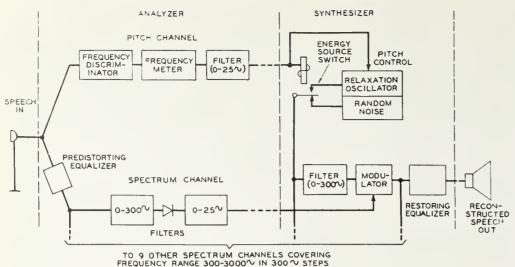
PRING RECENT YEARS great progress has been made in recording 35mm sound with spater fidelity and artistry and in reproceing it most effectively to high standards it theatres. Manufacturers' experts and the ace studio technicians and theatre problems have been working in such integer the cooperation toward these ends

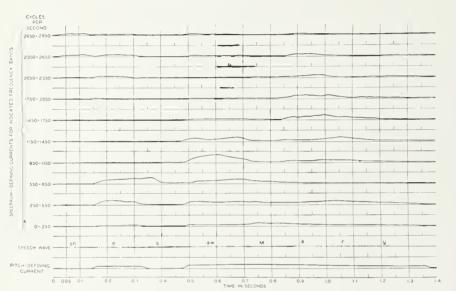
that news of these developments has more or less submerged news of other progress in the field of sound and music in daily discussion between technicians and in their professional journals.

Today research laboratories of industry, of universities, and individual inventors, are pouring out a wealth of pertinent and suggestive material. Investigations in recording of the voice, in recording of instruments, in creation of electric instruments especially designed for improved recording and broadcasting methods are continually improving and refining artistic procedure.

The alert photographer, soundman and musician working together, can find many constructive possibilities in these new developments. The showmanly technician has within his grasp many new devices and methods for enhancing the pre-







Charts above are fully described in accompanying story text commencing in the middle of Column 3, dealing with Bell lab's new Vocoder.

sentation of the creative efforts of the so-called talent branches of the amusement industries.

While our recording and projection experts are pursuing the worthy task of bringing technical order out of the chaos of equipment and acoustical problems, there are many new possibilities for the improvement of the entertainment the modern equipment will be asked to record and to reproduce,

There are few limits to the potential entertainment values than can open up through shrewd exploitation of developments cited above, in the hands of cooperative and progressive-minded photographers, soundmen, musicians and projectionists. This material is lying fallow to be seized upon by new geniuses of stage, motion picture, radio, opera, dance, pantomime, extravaganza, etc., in fact, any of the theatrical mediums through which entertainment is presented to a paying public can find new stimulating and enlivening materials to hand from which newer and more effective methods of presentation can be evolved.

Who can say what might take place in the traditionally static proseenium of the dramatic theatre, the musical comedy stage, the dance and concert fields, through use of these new materials. Consider the still unplumbed potentialities of recorded music and sound with motion picture action even beyond the forward strides of recent years.

Sound-photography in sub-standard fields still is open to great exploitation. Last summer we had the pleasure of scoring and recording the music for the first 16mm feature production in which sound track and the picture track were recorded simultaneously. The particular problems that arose in connection with frequency ranges, intensity level restrictions, etc.—necessitating considerable experimental study beyond standard 35 mm experience—made the work doubly interesting.

In the 16 mm and even the 8 mm field, universities and schools, sales organizations and other educational and commercial groups are creating an increasing demand for material that is not being met by the available supply. It is impossible to estimate the future range of this field, since it is only after years of battering the wall of indifference by a few pioneer enthusiasts that the motion picture method is being recognized more and more as a most efficient method of teaching. Despite the increasing publicity and many truly creditable improvements of recent years in equipment and films for sub-standard, commercial and home moviefilms with recorded sound, a basic technique still remains to be developed.

At this point, the average reader of International Photographer, who has probably gleaned a considerable smattering of information from various trade announcements, rumors from the laboratories and the manufacturing companies and the few technical papers on the subjects cited is liable to mumble, "So what, where have we heard this before?"

We thoroughly agree with the reader who tosses aside prophetic generalities as no longer stimulating fodder. The time has come to discard enthusiasms over a broad horizon for the more limited and more practical task of concentration upon specific things. The editors of INTERNATIONAL PHOTOGRAPHER and many intelligent technician friends of ours in the IATSE have long held the same thought. This is evidenced by the fact that INTERNATIONAL PHOTOGRAPHER's policy has tended more and more away from broadly general attempts at wide news coverage in the technical fields toward selective presentation of interesting developments.

In future discussions in the field of new enter tainment possibilities through new products of inventive minds and new technical tools in both the 35 mm and sub-standard fields, it is our plan to strictly follow this INTERNATIONAL PHOTOGRAPHER policy. This department will be thrown open to factual pointed news of new instruments new devices and new techniques in the combination of photography, sound and music.

A midwest university is making radical departures in detailed analysis of song perform ance. A studio technician patents new electrical music instruments. Piano and instrument tuning is being checked for accuracy by photographic methods. Certain practical limitations are ob served as guideposts in recording for 16 mm pro jection of sight-and-sound. A manufacturer well known to readers of this magazine imports a new adjustable reverberation system, that permits a wide variety of sound effects by simply moving a few dials. A famous sound lab gives Hollywood sound experts a preview peek at a sensationa new instrument during its development stages New scoring methods combine the technician's skill with greater creative possibilities for the composer, the arranger and the photographer of motion picture musical scenes. Such will be the material of this department.

While considerable material is already in hand for publication in succeeding issues, we welcome news of new developments along the lines men tioned from manufacturers, research workers university departments, and technicians, musi cians, projectionists in all branches of the industry.

In getting this department under way, no better instance comes to mind than the demonstration; last month to Hollywood technicians by Bel. Laboratories experts of their new Vocoder. This preview showing of a new device—still in the development stage—so that studio experts migh contribute valuable suggestions to be incorporated in the final perfected design, indicates an awak ening by the leaders in the sound equipment field to the vital need for constructive workaday coperation with studio experts that has long beer recognized by the film and lamp manufacturers

Whether the Vocoder becomes of supreme importance or is soon forgotten, it inaugurates a new era of valuable cooperation in the creation of new sound equipment for the motion picture industry, providing that other manufacturers follow this example and recognize the wisdom of giving practical studio technical experts the opportunity to make suggestions during development of equipment intended for use in the industry.

Hence, we this month introduce the Vocoder And with this leap into factual reporting of new developments along the lines mentioned we droj the editorial viewpoint and the prophetic personce and for all in favor of an objective news approach for this department in future issues.

The Vocoder is described in an official Bel statement as "an electrical instrument that invest igates and analyzes speech and then proceeds to remake it in practically any form desired." Whild the quality of the experimental machine demonstrated, was, of course, not up to studio standard for recording purpose, in its Hollywood demonstrations, it lived up to specifications. Its eventual possibilities as a sound department counter-par of the optical printer, which creates such miracles for photography (Int. Photog. June, 1938) are

stil to be proven, but in the cartoon and novel eff ts field, for unusual, comic and weird tricks, it lows excellent possibilities, providing the cost it too prohibitive. It is safe to say, however, the once developed, several of these machines coal find steady use in Hollywood studios, particarly by the creators of Mickey Mouse, Popery and other cartoon characters.

he Vocoder (illustrated on Page 7), was develbed by Homer Dudley and his associates in Be Telephone Laboratories, basically for telephic use; but it also plays an important role in he Voder, device for manufacturing artificial spech that has attracted great attention as part of he Bell exhibits at the fairs in San Francisco an New York. In the Hollywood showings, Duley and his assistant, Charles Vadersen, sheed how it can change the pitch of a voice. The service inflection, raise a baritone to a terr or soprano, or lower it to a bass tone.

sefulness of the Vocoder in speech studies lies ints ability to vary, singly or together, each of th elements of speech. The raw material of spich is two streams of sound. The proper variatics of these two streams give us intelligible spch. The first sound stream is characterized by hree properties; it has a pitch which is deterined by the fundamental frequency of vibratic; it has an intensity which is determined by th total sound power issuing from the mouth of th|speaker; and it has a quality which is determed by the relative amounts of sound power called in fixed frequency bands. All three of the properties of the stream vary as the stream preeds. The second sound stream is characteriz by having no pitch; it is a noise and has an innsity and quality which vary as the stream preeds. During most of the speech only one of the two streams is active at one time.

udley demonstrated the first mentioned sound at an as "the Buzz." It was a rich full note, seething like a muted automobile horn. From the note, electrical filters picked out thirty different ranges of overtones covering the gamut of the human voice. The same filters then broked on the second stream—a hissing sound—into the part proportion form all the sounds of speech. The voder, telephone robot at the two World's F's, mixes sounds by finger controls. What D lley demonstrated was a circuit which analyzes a oice into thirty parts and then uses the resists to control the proper amount of each of the soulds before they reach the loud speaker.

fter letting his audiences hear a test sentence bore and after it had been broken down and put tether, Dudley showed how it would sound wn the buzzer alone was used and its pitch wheld constant: a flat monotone like a chant. Be releasing the pitch, so it could follow the saker's voice, more naturalness was secured. Mal speech was converted into a whisper with the hiss was substituted for the buzz. While the hiss is relatively faint, it is essential in discultant of the contact of t

xpression is due to the constant swinging up a down of pitch as one speaks; when the sings are cut in half, the voice seems flat and digging; when the swings are twice normal, the vice seems more brilliant; when four times normal it sounds febrile, unnatural. The Vocoder citols can be reversed so that high becomes the odd lilting character of the Scandinavian tigues.

of the definition of the definition of the violet circuit (illustrated on Page 6), Vader-demonstrated the tonal qualities of a sentence



Shown with the Bell Vocoder is Homer Dudley (right) who with his associates in the Bell laboratories developed the interesting device, which is described in detail in accompanying story, with his assistant, Charles Vadersen, (left) who played actor for the Hollywood demonstrations to studio sound experts.

Starts New Series

Gerhardt Dorn, author of the accompanying article, is the son of a Hollywood pastor, and since leaving school has been active in studio, theatre and church music as a member of Los Angeles Local 47, American Federation of Musicians. An accomplished musician and composer-arranger, he has spent much time investigating new types of musical instruments and recording devices and has been active in experimental work in scoring and synchronizing direct with substandard film. He will present interesting news notes and technical data on progress in these fields in future issue of International Photographer.

when delivered with Vocoder running up and down the electrical frequency scale. At the low end, the voice was a deep rumble, while at the top side was a shrill sound with the words faintly recognizable. While Vadersen, in normal tones, spoke into the microphone, but the quavering voice of an old man emerged from the loud speaker. By combining three different pitch channels of the Vocoder, the one voice came out of the loudspeaker as a trio singing in unison.

Through records played on a turntable and attached to the Vocoder, it was demonstrated that speech can be created out of complex sound. Examples used were starting of a train, an aeroplane flying overhead, the musical tones of a pipe organ, and the hum of a power generator.

The aspect of interest for cartoons and novel effects was creation of words from the purring aeroplane, and the train; and most amazing was the word accompaniments created by the Vocoder from musical instruments. A pipe organ record suddenly transformed the treble notes of the chorus into easily recognizable words—and the exact words of the song itself. The same effect was secured by Vocoder treatment of a recording of a string quartette.

fundamental photographic chemistry, part 1

First installment of another chapter from Don Hooper's successful book on "Basic Photography," published by International Photographer in answer to reader demand; presented in handy form for filing as reference materia

By DON HOOPER

(So enthusiastic was response to International Photography," by Don lication in recent issues of Chapter II of "Basic Photography," by Don Hooper, which dealt with Fundamental Photographic Physics, that we are following up with the full text of Chapter III, dealing with Elementary Photographic Chemistry. Based on the famous "navy system" of photographic teaching, the book was compiled by Hooper to expedite his instruction courses in Los Angeles schools. The volume, published this spring, has been widely hailed as an excellent fundamental reference work. Again we remind our professional readers that while much of this material is familiar, seldom has it been gathered together in such handy form for ready reference. Readers of International Photographer who find this material worthwhile and desire to have the entire volume, may order through this publication. Only a few copies of the first edition are available. Full details will be found on Page 27 of this issue.—Ed. Note.)

INTRODUCTION

(29

It has been stated that photography is dependent for its present stage of development upon the science of chemistry. We can go farther than this and say that no photographic process is carried to completion without the aid of chemistry. For this reason it is essential that the Photographer have some knowledge of the chemicals he uses and the reactions they undergo in producing photographic results. This chapter will take up a short study of elementary chemistry and an outline of the various photochemical processes. The chemicals most commonly used in photography will be described and their uses given. No attempt will be made to explain the complicated nature of many chemical reactions, the idea of this chapter being to give the student a working knowledge in the use of his various photographic chemicals.

ELEMENTARY CHEMISTRY

All substances occurring in nature are formed from a limited number of ELEMENTS. Of these about ninety-two are known to exist. Elements may occur in the pure state or in combination in various proportions with other elements. Elements are substances which are not capable of division into any other substances than themselves. For example, silver is an element, and although we can cause silver to unite with other elements, we cannot break up pure silver into any other substance. When one element combines with one or more different elements the product of this union is called a CHEMICAL COMPOUND. As an example of this, the elements silver and chlorine can unite to form the chemical compound known as silver chloride.

CHEMICAL ACTIVITY: Elements differ in their affinity for each other. A few can not be made to combine with any other element, while others, like oxygen, unite readily with others, and with many under ordinary conditions. The chemical classification of the elements and compounds, depends, to a large degree, upon their relation to oxygen.

REACTIONS: The process of forming a chemical union between elements or compounds, or the breaking up of a union is usually called a CHEMICAL REACTION. The two main conditions for bringing about reactions are the presence of heat and moisture. As an example of the first, oxygen will unite with almost all elements under the influence of heat. A proper mixture of hydrogen and oxygen will not at ordinary temperatures unite to form water, but, under the influence of heat from an electric spark, they will unite explosively. As an example of the second, if we mix dry silver nitrate and sodium chloride there will be no chemical action. But by dissolving them in water they will react to form silver chloride and sodium nitrate. Practically all photographic processes employ the agency of water to bring about the necessary chemical reactions. In other words, the chemicals used are dissolved in water and the resulting solutions are capable of carrying out the chemical reactions desired.

CLASSES OF CHEMICAL COMPOUNDS: Chemical compounds are divided into five main classes, and for convenience these are listed below:

- ACIDS, which are formed from non-metallic elements and which contain hydrogen replaceable by a metal.
- BASES, which are formed from the metallic elements and when soluble are called alkalis.
- 3. SALTS, which are formed by the union of an acid and a base.
- OXIDIZERS, which contain an excess of oxygen and can liberate part or all of this oxygen to other compounds.
- REDUCERS, which have a strong affinity for oxygen and can take it from compounds containing sufficient amount of it.

TYPES OF CHEMICAL REACTIONS

There are several types of chemical reactions which take place photographic processes. They are listed below, with examples.

SIMPLE COMBINATION: This is the simplest form of chemical r action, in which two elements unite to form a compound. A very common example of this is the rusting of iron, in which oxygen from the air unit with iron to form iron oxide.

DOUBLE DECOMPOSITION: In this type of reaction two chemic compounds break up when brought into contact, usually in solution, it various elements changing places to form other compounds. The examp already given, of silver nitrate and sodium chloride being united in sol tion, illustrates this class. Here the atoms of chlorine and nitrogen chanplaces, the resultant compounds being silver chloride and sodium nitrate.

COMBINATION OF AN ACID AND A BASE: When an acid and soluble base are united in solution, the metal of the base replaces the hydrogen of the acid to form a salt. As an example of this, if hydrochloric ac is added to a solution of sodium hydroxide, there will be formed sodiu chloride and water.

OXIDATION: Oxygen, having a strong affinity for other elemen often unites with them in ordinary photographic processes. In additioxygen will unite with a number of chemical compounds used in photoraphy, which may, or may not, already contain a certain amount of oxyge The combination of oxygen with other elements or with chemical copounds is called oxidation, and is the most prevalent reaction in nature. When any substance burns it is oxidized. The rotting of wood and trusting of iron are examples of slow oxidation. In addition to the forgoing this term, oxidation is sometimes applied in photographic chemist to include other active elements than oxygen. Thus, the union of a active element with another element or with a chemical compound more called oxidation.

REDUCTION: This reaction applies principally to the liberation metals from their chemical combinations, and depends for its action up the presence of some substance having a stronger affinity for the remains of the combinations than the metals have themselves. The reduction iron ore is a good example of this, while in plant life the reduction carbon dioxide by the leaves is another example of this reaction. In pl tography we have another example, in which a compound having a stroaffinity for oxygen takes it away from other compounds not so greedy for

From the above we see that oxidation and reduction are opposite typosed or reactions. In many cases they occur together; when one substance oxidized, some other is reduced. In some cases several of the above typosed reactions may take place simultaneously.

These two types of reactions, which we have just mentioned are great value in photographic processes.

Reduction is usually referred to as the act of removing oxygen from compound containing it, while oxidation usually refers to the addition oxygen to an element or compound. However, in photography these ter are used to indicate reactions in which no oxygen may be present. If compound gains one or more additional atoms during a reaction, it often said to be oxidized by reaction, and thus the substance causing t gain is called an oxidizing agent. As an example, potassium ferricyani will dissolve silver, forming silver ferricyanide and this reaction, in whi no oxygen is involved, is called oxidation of the silver by the ferricyania A form of reduction extremely essential to photographic processes, which no oxygen is involved, is seen in the liberation of bromine from texposed light sensitive silver bromide grain by the action of a solution Elon, Pyro, Hydroquinone or other developing (reducing) agent. (S developing below).

OUTLINE OF CHEMICAL PHOTOGRAPHIC PROCESSES

Reference has been made in previous chapters to the latent impand the means of rendering it visible and permanent. The chemical p cesses necessary for these purposes are the main ones employed in pl tography, and before the various chemicals we use are described a br description of these steps will be given.

THE PHOTOGRAPHIC "FILM": Sensitive photographic materials consist of sheets of paper, glass or celluloid upon which the "emulsion" light sensitive salts usually suspended in gelatine is spread. This gelative mulsion clings firmly to the support, and is closely packed with grains the sensitive salt. In the case of negatives, the support is transparent, who for positives, or prints, it is usually on paper and the image is viewed

rlected light. It is the action of the various chemicals upon the exposed ets contained in this thin layer of emulsion with which photographic

emistry has to deal.

DEVELOPING: Upon exposure in a camera, the grains of the silver bmide, chloride or iodide, depending upon which is used, to form the lht-sensitive material of the emulsion, are so effected by the light falling them as to form the invisible latent image. Certain reducing agents eveloping agents) known as REDUCERS have the power of removing the llogen (bromine, chlorine and iodine) elements from the silver salts, that re acted upon by light, and leave a deposit of black metallic silver which ms the visible image. This occurs because the developing agent has a ich stronger affinity for the exposed halogens than the metal of the silver t itself. These halogens, thus extracted from the exposed silver bromide, idize the developing agent and it is the bi-product of this oxidation that lickens the exposed silver. These reducing agents, besides having a ong affinity for the exposed halogens, are also rapidly oxidized by oxygen m air in the solution. To prevent this further oxidation, another com-und known as a PRESERVATIVE is added to the solution. This chemiis itself oxidized instead of the reducing agent.

It was early found that the process of development takes place very

wly or not at all unless the solution is alkaline. For this reason an kali is added to the solution to speed up development. This agent is own as the ACCELERATOR and swells or softens the gelatine, pertting greater access of the solution to the emulsion. However, a deloping solution, containing only these three agents, works so energetically to also react upon the unexposed silver salts, thereby causing a chemical g on the film. To prevent this occurrence, a fourth agent known as the ESTRAINER is added. The function of this agent is to slow down the tion of the ACCELERATOR, thereby balancing the developing solution that it acts efficiently and with the required amount of energy upon e latent image.

DEVELOPING AGENTS

Agent

REDUCER

Removes bromine from the exposed silver-bromide grains, leaving black metallic silver. Prevents excessive oxidation of the reducer and

PRESERVATIVE

preserves the solution.

ACCELERATOR

RESTRAINER

An alkali which softens and swells the gelatine emulsion and speeds up the rate of development. Slows down action of accelerator so as to prevent reduction of unexposed silver bromide and fogging of material.

The above four agents, when dissolved in water according to the formus that have been worked out to produce the best results, form the veloping solution. The exposed negative or print, after being immersed this solution for a suitable length of time in the dark, or under a snitable light (safelight) is developed causing the latent image to be transformed into a visible black silver image.

FIXATION: The unexposed silver bromide grains are not effected by the developing solution, therefore they still remain in the emulsion after the visible silver image is formed. This unexposed silver bromide is still sensitive to light and if not removed would darken upon subsequent exposure. Sodium Thiosulphate (Hypo) is capable of dissolving this silver bromide from the emulsion. The next operation, then, after developing, is to immerse the print or negative in the "fixing bath". In this bath, as in the developing solution, there are several different agents. FIXING AGENT (hypo) dissolves the unexposed silver bromide from the developed negative, leaving a clear negative image of the subject. Since a certain amount of alkaline developing solution is carried over into the fixing bath with the negative, and since development will continue as long as this alkalinity exists, a small amount of acid is added to the fixing bath to NEUTRALIZE the alkali and stop development immediately. The reducing agent of the developing solution is subject to oxidation upon being carried over into the fixing bath, which tends to cause stains on the emulsion, and also in an acid solution the fixing agent tends to decompose, liberating sulphur. To prevent this oxidation and decomposition, a PRESERVATIVE is added to the bath. A fourth agent known as the HARDENER is added

to practically all fixing baths. Its action is to harden and prevent further or undue swelling of the gelatine emulsion during subsequent washing. It should be understood that the action of the hardener, although highly desirable for mechanical reasons, is not essential in fixing the image.

AGENTS OF THE FIXING BATH

Agent Remarks Dissolves undeveloped silver bromide from FIXING AGENT emulsion. Neutralizes alkali carried over into fixing bath NEUTRALIZER by prints or negatives. Prevents oxidation of reducing agent and de-PRESERVATIVE composition of fixing agent. Hardens gelatine and prevents further swelling. (This action is not essential to actual HARDENER fixation.)

WASHING: After fixation there remains in the emulsion, in addition to the insoluble silver image, a number of soluble compounds resulting from the reactions of developing and fixation. If these were allowed to remain in the emulsion, the image would fade and become discolored in a short time. Therefore, after fixation, the negative or print is washed in clean water for a period long enough to remove these soluble compounds and leave in the gelatine nothing but the silver image. It is then ready

(To Be Concluded in August)

DROJECTION SYMPOSIUM, PARTS, VII., VIII.

art Two of Academy Research Council report on thorough and teehnically accurate planning of test reels for stanard theatre sound program; standard and push pull sound track usage in present production from major lots.

ART VII: Final installment of Academy report on test reels.

By JOHN HILLIARD MGM Sound Department

For the purpose of determining the acoustic sponse of the horn systems and of the auditorm we have made up Standard Warble-Tone

Secondary Standard prints are available, in th Variable Area and Variable Density, each ntaining approximately the same frequencies as e included in the Multi-Frequency Reels.

Each frequency in the Warble Tone Test Reels s a warble of \pm 5 per cent on all frequencies, is degree of warble having been chosen so that anding waves will be minimized in the audi-

Through the use of a microphone in conjuncon with an amplifier system and a sound level eter, the acoustic response of the sound system id auditorium at the various frequencies can be etermined. Under normal conditions at least

five different microphone positions in the auditorium are used, and the readings are averaged to give the acoustic curve for the auditorium.

To determine the acoustic response of the speakers, the conventional method of measurement involves the averaging of 5 or more readings made with the microphone close to the speakers. However, in making these measurements care must be taken to select microphone positions which will not favor the response of either the high or the low frequency units.

These warble tone prints are calibrated exactly as are the Multi-Frequency Test Reels, that is, against the same calibrating reel and on the same

To check the lateral alignment of the scanning elit we have a Standard Buzz Track (Figure 5). The opaque track is 86 mils wide. On the picture side of the track there is a 300 cycle tone and on the sprocket side a 1000 cycle tone. These tracks are so spaced that if the scanning slit is properly placed and of the correct dimension, no tone will be heard from the reproducer, but if the scanning slit is improperly placed toward

the picture side the 300 cycle tone will be heard,

and if misplaced toward the sprocket side the 1000 cycle tone will be heard.

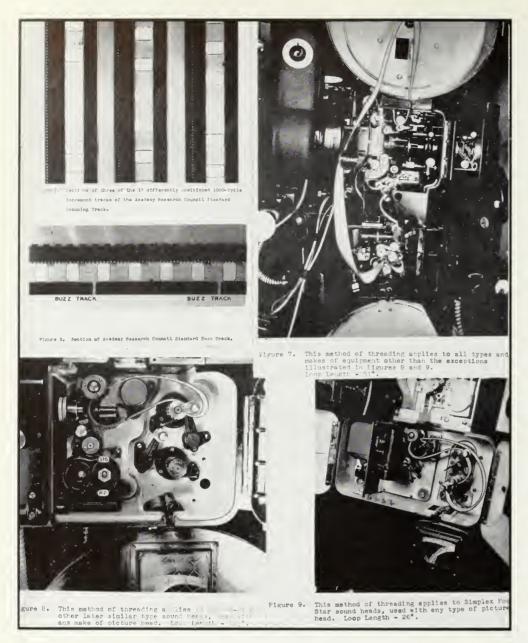
A loop prepared from this track is run in the equipment and the scanning slit laterally adjusted until no tone is heard. In making up these prints we hold the track placement to within ± 2 mils of the correct position.

This track thus provides a means of adjustment of the position of the scanning slit to the current positioning tolerances.

After the scanning slit has been checked for proper dimension and placement, it is of course necessary to check the uniformity of illumination across the scanning slit, and for this purpose we have made available a Standard Scanning Illumination Test Track, which contains 17 approximately equally placed 1000 cycle tracks, each with an amplitude of 6.8 mils ± 1.6 percent. (See Figure 6).

If the illumination on each track is constant, the output as measured with a VI meter will be constant, but if the illumination varies the amount of this variation may be read directly on the VI meter measuring the output.

Of the 17 different tracks, the outside two and



the inside two fall outside of a correctly positioned 84 mil slit. Therefore, with correct scanning illumination only tracks 3 to 15 inclusive will be reproduced at full output. The maximum allowable variation in output level is 3 db, that is, a tolerance of ± 1.5 db.

After this track has been run and the readings plotted against the track position, the graph so secured indicates a necessity for correcting any non-uniformity in the illumination.

This correction should be by adjustment of the exciter lamp rather than by changing the lateral adjustment of the slit.

For adjustment of rear scanning sound heads, that is, the ERP1 TA 7400, we have what is termed a rear scanning adjustment track, which consists of an opaque 84 mil sound track whose center is \pm 2 from the nominal center line of 243 mils from the guided edge of the film.

Our Standard 7000 Cycle Film contains a 7000 cycle variable density recording at 2 db below 100 percent modulation, in which the film response level varies less than $\pm \frac{1}{4}$ db. This film is available to be used as a test film to adjust focus and azimuth of reproducer optical systems.

The Committee recommends use of 7000 rather than an 8000 or 9000 cycle track because of fact that in most theatre reproducing systems the low pass filter greatly attenuates these higher frequencies. When using either 8000 or 9000 cycle tones for adjustment it is usually necessary to remove

the low pass filter. However, at request of a number of groups in the field who have been cooperating in work of the Committee, Standard 9000 Cycle film with a response level varying less than $\pm \frac{1}{1}$ db is also available for special purposes.

These various Test Reels have been made available as a result of tours of investigation covering entire country made by different members of the Committee during past year. Visits to hundreds of theatres indicate in most cases a lack of sufficient test film for the projectionist and service men to provide even routine adjustment of equipment. For this reason, Committee and Council believe that in making these test reels available at a minimum cost through one centralized distributing agency, we are performing a service to the entire industry.

All of these reels are available through Research Council upon a cost price basis which in most cases, includes no negative or recording time costs, as these items have been furnished by one or another of the studios at no cost to Committee or Council.

Tours of investigation by individual members of Committee mentioned above also brought forcibly to our attention fact that many theatres had no means of balancing their projection machines for output level. For this reason, it was decided to make available to theatres an easily used Balancing Film at reasonable cost and with sufficient instructional information to enable pro-

jectionists to check volume level balance between machines as part of daily routine.

Hundreds of these loops have been distributed to the field and we believe their use represents a great step forward in the standardization of theatre sound projection.

Data assembled by the Committee on various types of equipment commonly installed in the theatre indicated that longest loop necessary is any equipment would be slightly less than 7 ft The Balancing Films were therefore made up to consist of sufficient film for two such loops.

Instruction folder sent with each set of Balan cing Films shows proper method of threading loops into each of common types of reproducing equipment, and outlines proper method of checking the volume level balance between the two machines.

Figures 7, 8, and 9 illustrate method of threading Balancing Films into various common type and makes of equipment.

After loops have been properly threaded, machines are started and volume output is compared by means of meter or by ear. The machines are then balanced for equal loudness a identical fader settings by adjustments normall-provided in the equipment.

In addition to preparation of Test Reels out lined above, Committee has been active on

number of other projects.

Listening tests have been conducted at severa theatres recently equipped with the Simplex 4 Star System, and we intend in the very nea future to issue a supplement to our Bulletin Standard Electrical Characteristics to specificharacteristics for Simplex Systems similar to those previously specified for the various ERP

and RCA equipments.

Recent investigations indicate that only ap proximately 25 percent of existing two-way in stallations have been set on the Standard Electrical Characteristic. We believe several reason for this situation exist. Acoustically defective auditoriums are in most cases not given the prop er acoustic corrections, and an attempt is made to compensate for defective acoustic condition by electrical adjustments intended to make up for these deficiencies. Under such conditions i is, at best, difficult to compensate electrically fo acoustic deficiencies. A great deal of time and effort must be spent to obtain a satisfactory electrical characteristic for such a theatre, and is general it is not possible to put forth such effort Result is that even if the house is set so that the sound is passable, not all concerned with the theatre are satisfied with it, and further effort are made to compensate for the acoustic deficient cies by a continual juggling of the electrical characteristic.

We believe that far more satisfactory result would be obtained and in the end less time and money would be expended if acoustic defects are originally remedied by acoustic treatment of the auditorium.

We have had some comment from the field regarding volume variation between different reel in the same release print or between different sequences within the same reel, requiring fader changes in the theatre during the show.

Some of these comments have been referred to the Council's Sound Recording Committee under the Chairmanship of E. H. Hansen of 20th Century-Fox. Tests conducted by this Committee indicate that recordings balanced for reproduction on an equipment set to Standard Electrical Characteristic will invariably require fader changes when played in a theatre adjusted to non standard Electrical Characteristic. We consequently believe that a great deal of the volume variation encountered in the field is a result of reproduction of product originally recorded for the Standard Characteristic, but which is played upon equipment set to a non-standard characteristic.

Listening tests have been conducted in a sufficeint number of acoustically average auditoriums to firmly convince Committee that present day

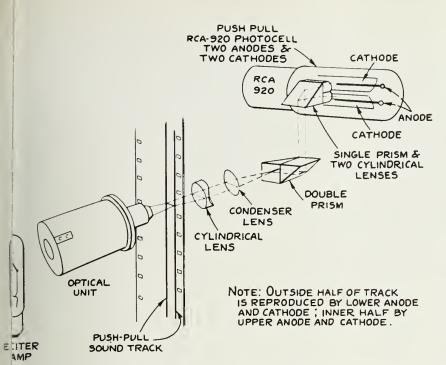


FIG. 2. LIGHT TRAIN PUSH PULL- OPTICAL SYSTEM.

rordings are sufficiently alike to reproduce satisctorily on an equipment set to the Standard Ectrical Characteristic.

lowever, adoption of Standard Electrical Chararistics has not been as widespread as would b'expected, possibly through a lack of appreciation of intent behind the Committee's work,—it is, our aim in setting up a Standard Reproding Characteristic so that the studios might illum set up a recording characteristic.

Vhile there have been no radical changes in rording or reproducing in the last year, there he been gradual improvement in both branches othe field. We believe that during the last year idea as to what constitutes good sound may he changed within the industry. A theatre cisidered to have good sound a year ago may rebe so considered at the present time. As a disequence, it is possible that more recent insulations have been set to the Standard Electral Characteristic and that a 25 percent estimate may be low.

We also realize that we in Hollywood may not clays fully understand problems of manufacters and service groups as encountered in the d. We have recently sent a letter to the sound servisors of several hundred theatre circuits claiming that our recommended Standards have received as widespread use as was hoped; it in some cases they have been modified and some cases they have been completely disreded, and that Committee and Council would very much interested in knowing reason for s condition.

Experience of the men in the field has unubtedly given them many valuable ideas on a re reproduction, and we would appreciate eiving comments or suggestions on the Comtue's work as well as on the use of our Standds to date.

We also realize that we in Hollywood are not thout fault, so we have asked at the same time r criticisms from the field on current studio cording. To mix metaphors for the moment, are not throwing rocks at glass reproducing stems, and we are attempting to clean up our on back yard at the same time.

Our entire aim, in fact, is devoted to improve e overall and reproduced quality of sound moon pictures.

Accomplishments achieved so far have been

result of cooperation of a large group representing all of various interests in the industry. If each of these groups had had to work separately no one would have been able to accomplish alone even a small proportion of what has been accomplished to date. Needless to say for our future efforts we are counting upon continued interest and cooperation of all who have been participating in this work.

We welcome any comments or suggestions or criticisms at any time, and all will be given careful consideration by Council and Committee. Whether or not we have communicated directly, we would appreciate comment from anyone in the field who may have information concerning field conditions which would be of interest or assistance to us in our work.

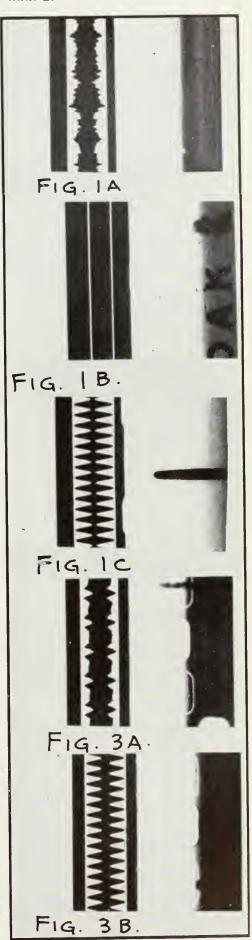
PART VIII: Standard and push pull sound track.

By WATSON JONES
RCA Mfg. Co., Hollywood

THERE ARE CERTAIN points in favor of both standard and push-pull types of sound track and the selection of one or the other type depends upon several factors existing in the studios and in the theatres. Some of these factors affecting the use of standard or push-pull recording will be explained in the following paragraphs.

The RCA standard variable area type of sound track is made up of two symmetrical sound images as shown in Fig. 1-A. This type of track is generally referred to as a bilateral or duplex track. This type of track can be reproduced only in a standard type of film reproducer. Fig. 1-B shows a standard type track with no modulation. The two narrow lines are known as bias lines and these lines are adjusted for widths of from one thousandths (.001 inch) to four thousandths (.004 inches)

Illustrations on this page are fully described in accompanying story by Watson Jones, beginning on Column 2.



depending upon the particular recording and the studio making same. These bias lines are formed by the noise reduction shutters in the RCA recorders closing in at times of no signal.

Fig. 1-C shows a constant frequency record. In this condition the shutters in the recorder have been automatically pulled open by the noise reduction amplifier by such an amount that there is a clearance between the peaks and the shutter edge. This amount of clearance between the recorded peaks and the shutter edge is known as margin. This margin or clearance is adjusted for the correct value at the time the recording is made. It will be noted in Fig. 1-C that the peaks on either half of the track are exactly opposite. This denotes a standard type of recording.

The RCA standard variable density track is similar in appearance to any other type of standard variable density track. The dimensions for this type of track were shown on Page 24 of the October, 1938, issue of International Photographer. This method of recording is being used by some studios for original and release recordings.

Push-pull recording has been in use for several years by a number of studios as a means of making original recordings, but its use for theatre release prints has been very limited due to the fact that very few theatres are equipped to reproduce pushpull recordings.

The most important advantage of Class A push-pull variable area track is due to cancellation of even harmonic distortions which are introduced when incorrect densities of negative or print are used. There are certain variations of sound track density encountered in the studio from day to day. These variations are due to a number of causes, such as emulsion speed, exposure, development, retrogression, temperature, etc. It is possible to keep these variations within certain limits and many control methods are used by the studios in order to keep these variations within limits. The fact that certain density variations do exist and that Class A push-pull area track is not nearly so critical to density variations as standard track is the reason for the use of the Class A track. A complete discussion of this subject may be found on pages 237-245 of the March,

1939, Journal of the SMPE. Fig. 3-A shows a Class A push-pull variable area track and Fig. 3-B shows a constant frequency track of the same type. It will be noted that the peaks on one-half of the track are opposite the valleys on the other half of the track. A normal splice in a Class A push-pull track makes very little noise when being reproduced, even though the splice is not painted or blooped.

A typical push-pull optical system for the reproduction of push-pull track is shown in Fig. 2. That part of the optical system that focuses the beam of light on the sound track is similar to any standard optical system. After the light passes through the sound track it is picked up by another lens assembly and the light finally reaches the photocell. The two cylindrical lenses directly in front of the photocell project the two beams of light on the two cathodes of the cell. These two beams of light represent the two halves of the pushpull track. The RCA 920 photocell used has two anodes and two cathodes as seen in Fig. 2. This same optical system can be used to reproduce a standard type of track by proper combining of the output of both halves of the RCA 920 cell.

STILLS MUST HAVE ACTION

Photographic symposium of effective stills from current Hollywood crop, illustrating specific points in *International Photographer*'s campaign to improve studio stills and further cooperation with stillmen: rated by a publicity director.

By JOHN LEROY JOHNSTON

Publicity Director, Walter Wanger Productions

Gradually Hollywood is becoming more and more conscious of the fact that stills, as well as motion pictures, must move. We live today in a very fast moving world and static things will not impress the public any more. Particularly does the public which patronizes motion pictures (and more than ever. shops for its entertainmen), expect action. Motion picture patrons have never been so discriminating, so picayunish as they are today and when stills in the theatre lobby or in the magazines and newspapers do not keep pace with the times the product they are intended to sell suffers.

Action stills are not new to Hollywood. Nor is Filmland short of men competent to make them. But—Hollywood has been short of men with gumption and incentive enough to fight (often against bitter obstacles, we admit) to get them. Making stills that really sell motion pictures has become a matter of the survival of the fittest.

The stillman who won't try to keep up with the parade, or the man who thinks he can coast along on his past reputation fools no one but himself

The day of formulae, in Hollywood, is over.

Today is a day of specialization, quick thinking and pictorial reporting of ideas as much as technique, of spirit beyond technical competence. Stillmen must have imagination and flexibility and stillmen must constantly think and act in terms of TODAY!

No Hollywood studio has a corner on 'best stillmen'. It is true, however, that in some studios

At It Again

Serious attention to problems of the still photographer and the importance of stills to motion picture exploitation has been noted since the John LeRoy Johnston-Jimmy Doolittle articles pertinently attacked the situation in recent issues of International Photographer. A number of readers and particularly stillmen members of Local 659 have suggested that we make this discussion more specific and present outstanding newsworthy shots by studio photographers. John and Jimmy have agreed and we herewith present a layout of stills with comments by Johnston. Watch for a follow-up article by Doolittle in an early issue of International Photographer.

stillmen are held in higher regard than in others and accomplish better results because they have, by virtue of their own personality and ability, compelled proper respect for what they go to get. In presenting, on accompanying pages a quick, random selection of what he considers good stills, the writer wants it distinctly understood that these are not, by any means all of the best of a naturally large batch of outstanding stills. But they do serve as good examples of what a publicity director considers interesting, distinctive

up-to-the-minute stills obtained at a minimum expense in money, time and effort. Thought and good judgment made these stills unusual. They require little explanation. There is no secret about them. (Pictures on Pages 14-15.)

- (1) An action still from "The Real Glory" by Robert Coburn. The cameraman added menace and action to a dramatic shot by getting down low, cutting in part of a wheel—showing David Niven in anything but a pose—yet the still was posed.
- (2) Pictorially recording the thrills of an action drama like "Stagecoach", Stillman Ned Scott chose grab shots instead of beautiful poses. A Graflex caught the stagecoach in full flight, a Leica caught Yakima Canutt doing a fast 'running W' with his horse going down head first as John Wayne shot at him from the silhouetted coach behind. Had Scott waited to be called for stills, or taken the wrong camera with him these splendid selling shots would never have been made.
- (4) Don Keyes caught Richard Carlson, Ann Sheridan and a baby in action on the Wanger set with an Ikon camera. The baby was no respector of his problems with an 8x10.
- (5) Ann Sheridan, sitting still on a studio stool really looks like the active out-of-door girl she portrays in "Winter Carnival" because Don Keyes had a small fan to blow her hair when he shot this off-stage portrait.
- (6) For poster art Keyes used a slightly bigger fan and the wind helped both Ann Sheridan's hair and the expressions on Richard Carlson's face as well as her own.
- (7) "Stagecoach" was a picture of untheatrical frontier characters. When Stillman Ned Scott

PRICELESS QUALITIES

NEW film emulsions are indispensable to motion picture progress, but only proved reliability and uniformity make them practicable. Eastman *Plus-X*, *Super-XX*, and *Background-X* have those priceless qualities—hence the everyday use they are enjoying throughout the industry. Eastman Kodak Company, Rochester, N. Y. (J. E. Brulatour, Inc., Distributors, Fort Lee, Chicago, Hollywood.)

EASTMAN

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for general studio use

SUPER-XX

for all difficult shots

BACKGROUND-X

for backgrounds and general exterior work

















they did so. Berton Churchill fairly lived the 'phoney banker' in his portraits instead of being a stilted, ill at ease subject. Likewise Scott caught the full strength in George Bancroft's rugged face (9), having the actor 'swing into' a pose after sharp shadows and carbon-highlights had been set. (8) Muky, Warner stillman, saw a chance to

made his portraits he had the actors speak their punch lines to him and snapped 8x10 studies as

make an ordinary shot look unusual by snapping this dancer in contrasty black and white. He made his still more intriguing and artistic by being shot from a distance than if he had filled his plate with the dancing image. Many photographers would have passed up this one.

(10) Schuyler Crail, also of Warners, pre-

ferred to get strength and action out of prize fight shots of Wayne Morris by catching him offguard, and from a low angle. In the prize ring was no place to make Morris look like a handsome hero. Crail preferred to make him look like

(11) Paul Calvert of the Los Angeles Times won a prize with this news shot of Postmaster General Farley dedicating a new postoffice. Shooting a flash from a low angle, by giving proper consideration to his composition, Calvert accomplished a news picture that was also a very fine action portrait that required no caption

No caption really was needed for this shot of Ann Sheridan (the hottest oomph star in pictures), and Fireman Jack Griffin, by Don Keyes. The still tells its own story.

(13) Ray Jones of Universal has made starlet Constance Moore a gay, interesting youngster with this well posed—action portrait.

(14) Ann Sheridan appeared to be actually skiing in this posed studio poster art shot for Wanger's "Winter Carnival." A wind machine and careful lighting and posing made this 8x10 seem natural.

(15) Keyes gave Miss Sheridan an unusual dignity and sheer allure by using a circle of nine photoflood lights on this portrait. The still required less than a dollar's worth of retouchnig and shows what can be accomplished when a cameraman does not try to make all his portraits in the same lighting style. In color it was like a fine French pastel sketch.

NEW PROJECTORS

LAST MONTH we commented briefly on the coming projection and sound equipment war, with the important companies already marshalling their forces in price cuts, improved service and equipment. This referred particularly to the sound field in theatre operation. However, the projection equipment field is not to be overlooked in the competition that is expected, within the next five years as important basic patents run out.

According to latest advices, there also will be a rush of new projection equipment under new labels. First to invade the field against the existing manufacturers. is reported to be the Brenkert organization, well-known for their arcs. Early announcement of a new projector from this company is expected, possibly late this month, or early in August. Other organizations are readying new equipment and the smaller independent companies are getting ready for a period of intensive competition.

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PARAMOUNT'S GOLDEN CIRCLE

lablicists meet competition in exploiting new starlets in industry rush for we were started the following the startest in the

lessing problem of Hollywood exploit'rs is the rush of new faces to the screen talent scouts hunt the country over and TN personalities by the scores take their cinces at stardom in an industry-wide amble to create fresh acting personalias a box-office stimulus. This general husiasm for new faces presents an acute ling problem when the competition is so despread. Publicists must introduce new rsonalities to the public and associate rsonality names with their faces through otographic exploitation and of even eater importance is the need for immediemphasis on a budding starlet to comay sales workers and the many men in atre organizations who control film ying and upon whose enthusiastic cooperation in selling new personalities to their home-town patrons, much of the success of a new player depends. An interesting and comparatively inexpensive solution of this problem has been worked out by Paramount's alert publicity department.

Paramount is using photos — 11 by 14 portrait shots specially mounted and suitable for framing—to acquaint division and district sales managers and theatre partners with new faces on the lot.

William LeBaron and Y. Frank Freeman, studio heads, recently organized a Golden Circle of new faces and elected to its membership 17 talented young players. These are the players whom executives regard as having the best prospects for stardom. Publicity in behalf of the newcomers will be backed up by the produc-

tion department in giving them increasingly better roles.

In order that the men in the field—the selling men and their theatre contacts may become more sharply aware of the new talent, Robert M. Gillham, director of advertising and publicity, has arranged that 75 sets of photographs of the Golden Circle members be printed up in the studio still department and sent to the sales managers and partners. In addition to the 17 Golden Circle members, photos of Madeleine Carroll, Bob Hope, Linda Ware and Carolyn Lee, all of whom are comparatively new arrivals on the Paramount lot, are being included in the shipments. Miss Carroll and Hope already have attained stardom, of course, and therefore are not of the Circle, while the other two players are too young for the organization.

In the Circle are Joseph Allen, Muriel Angelus, Judith Barrett, Louise Campbell, Tom Coley, Virginia Dale, Ellen Drew, Betty Field, Susan Hayward, William Henry, William Holden, Evelyn Keyes, Janice Logan, Joyce Mathews, Betty Moran, Patricia Morison and Robert Preston.



Described in News of the Month, starting on opposite page, are: Top, second unit on Frank Capra's Columbia production. "Mr. Smith Goes to Washington": Bottom. christening latest

News of the Day newsreel motor units by Mickey Rooney and Ann Rutherford.

news of the month

Cora's "Mr. Smith Goes to Washington" second unit; Newsreelers streamlined transportation christened: Developments on color front; Al Brick honored by Headliners Club for outstanding newsreel shot of year: Screwball baseball.

Cora's Big Crew

Production activity on Frank Capra's last picture for Columbia, "Mr. Smith G s to Washington," calls for three camunits. Biggest unit is the second crew haded by first cameraman John Stumar. Speed for International Photography appear behind the cameras on opposite page. Reading in left to right, back row: Peter Denie, Webster, Buddy Harris, Parte Brown, Powers. Sam Rosen; front row: Byron wright, Stumar, Leo Winchester, Rod Timie.

Seamlined Newsreelers

California news-gathering staff of News of the Day reel now has the last word in this portation in latest new Dodge Deluxe sans equipped with special Philocoradios. Streamlined units were given a christeing with charged water last month by MM starlets Mickey Rooney and Ann Retherford. Seen on opposite page, left tright, are newsreel cameramen Greenwid and Kluver, both members of Local 60, on top cars, and soundmen Jones and Erre, members of Local 659, standing angside the new cars.

Nw KHJ Tele Plans

Los Angeles radio station KHJ, with wom Local 659, IATSE, is cooperating in first program of professional camerann assisting constructively in television better the city planning board on plans for the Jatation W6XAO on a 1700 foot elevation in the Hollywood foothills, near the fined Hollywoodland sign. In advance of the mean station, the KHJ television broaders resume this month with a change-city to the standard 441-line broadcasts of the mean station in the standard 441-line broadcasts of the mean station in the standard 441-line broadcasts of the standard

adliners Honor Brick

National Headliners Club awards gold ques to outstanding newspapermen, otographers, newsreel men and radio excasters at their sixth annual banquet Atlantic City on July 15th. For his dratic shot showing the fatal plunge of the price of the British polo m during their three-game series with a ked California four last February and Jrch, Al Brick, Fox Movietone News'



Al Brick, ace Movietone News cameraman, honored by Headliners Club for outstanding newsreel shot of the year. See Column One.

ace cameraman on the Pacific Coast will receive the gold plaque for the best domestic newsreel shot of the year.

Just about the furthest point a man can get from Atlantic City, New Jersey, where the National Headliners Club meets — is Alaska and there cameraman Al Brick will celebrate the occasion. Brick is on one of those newsreel assignments that make the average man say "not for me."

Burned by the suns of every climate, Brick has ranged the world for 20th Century-Fox Movietone News for 20 years. One of the first sound cameramen, he filled in at his company's Hollywood studios for a couple of years while the production cinematographers were familiarizing themselves with the mysteries of the new medium. But two years in one place was about

all this elongated rover could stand and he solicited Producer Truman Talley to effect his transfer back to his first and only love, newsreel work.

Brick started newsreel work twenty years ago with the inauguration of the old Fox (silent) News. He has visited every continent in search of newsreel material and was the first man to take a motion picture camera to the Orient.

With startling regularity, Al Brick's name is credited with outstanding newsreel coverage. Last Fall, his aerial shots of the attack and bombing groups of the U. S. Army Air Corps won national praise. His shots of the disputed record forward pass made by Kenny Washington in U.C.L.A.'s thrilling game with U.S.C. in 1937 showed with remarkable clarity the exact distance covered by the pigskin. Reaching way back into the Movietone files, one finds that Al Brick first won distinction by his daring expose of Japan's military preparations in 1925. He has been a member of the Pacific Coast staff of Movietone News for the past 11 years, and is a veteran member of Local 659. IATSE.

Annual Charity Ball Game

• Annual "big game" of baseball between Hollywood's Comedians vs. Leading Men for charity will be held at Wrigley Field. Los Angeles, Saturday, July 15. This traditional defiance of all "safe and sane" baseball tradition annually produces a melange of personalities and insanities in bold attack upon the national pastime, and generally plays to a full house. The comedians and their rivals have been practicing or rehearsing intensively for the past month and many laughs are expected.

Developments on Color

• While International Photographer's series in important modern systems was delayed due to activity of important technicians collaborating on the series during the current production activity, several important developments took place during the past month in the field of color. Technicolor found its capacity taxed with the enthusiasm of major producers for color in current productions. Dufaycolour, with its American organization recently reorganized, announced a re-entry into Hollywood to offer a negative-positive single film version of its research screen pattern direct

color, for obtaining quantity release prints. This is still to be established through practical production tests.

Cinecolor still is experimenting with its single film system of adapting the Kelle-Dorian additive lenticular film to providing three-color separation negatives for subtractive processing, but with no new announcements from that company. Meanwhile, the trade is expecting early announcement from Agfa Ansco of the availability of its monopack triple emulsion Agfacolor, which is now available on the continent, and on which extensive tests have been under way for some time in the expectation of meeting professional color production demands.

Important Documentary Film

• Two important documentary films were previewed last month in Hollywood to appreciative audiences, and were favorably reviewed.

The motion picture industry's contribution to the New York and San Francisco World's Fairs was a 14-reel production that trully merited the label of "epic." Culled from the vast files of the industry under the supervision of Cecil B. Demille, with Jesse Lasky, Jr., on the narrative, and William Pine and William Moulton as production aides, the picture, titled "America. Land of Liberty," was an impressive depiction of the value and importance of the motion picture industry as an artistic custodian of American history and traditions.

Also shown to a private audience was "The City," produced under a grant from the Carnegie Foundation. Presenting outstandingly effective instances of editing to produce strong dramatic and emotional effects, the four reel production dealt with the modern trend away from the cluttered metropoli that have mushroomed up during the past 50 years to the saner decentralized communities that are a more pleasing prospect for the future.

Supervised by Oscaro Serlin from a scen-

Library Reopened

Rearrangement of International Photographer's offices in the Taft Building with a new entrance at Room 508 has permitted restoration of the magazine's library of photographic publication which is available to members of Local 659, IATSE, and other studio technicians. Members and friends are invited by the editors and Lcon Shamroy, chairman of the magazine committee of the executive board. to visit the offices and make use of a very complete file of photographic publications and trade journals of the American and foreign motion picture industries.

ario by Henwar Rodakiewicz from an original outline by Pare Lorentz, "The City," was directed and photographed by Ralph Steiner and Willard Van Dyck.

Another Graduate

• Captain Dwight L. Mulkey of the Signal Corps of the United States Army, who has just completed an eight months' course of study in motion picture production under the auspices of the Research Council of the Academy of Motion Picture Arts and Sciences, left Hollywood this month to return to Washington, D. C., where he will be engaged in the production of Army Training Films.

Of six officers previously trained in Hollywood studio methods under direction of the Academy Research Council, Major R. T. Schlosberg is in charge of the Photographic Division of the Signal Corps at Washington, Major Fred W. Hoorn is in charge of the Field Unit at Wright Field, Major M. E. Gillette is in charge of the Field Unit at Fort Monmouth, and Captains Charles S. Stodter and W. W. Jervey

are in charge of the production of Training Films in the Washington area.

Next officers scheduled to take the training course is First Lieutenant Harry J. Lewis, who will arrive in Hollywood from the East early in September.

Ivano Tours Country

• Paul Ivano, veteran ace cameraman member of Local 659, currently is on a tour of the country securing shots for important commercial films for Roland Reed Productions. Lester Schorr, assistant, accompanies Ivano on the trip.

Student Burns

• Bob Burns is reported taking lessons from the boys at the Paramount camera department on how to operate a 16 mm camera so he can start taking pictures of his youngsters.

New Summitar Lens

• Soon to be available in this country from the Leitz organization will be a new F:2 lens called the Summitar, which has a 2-inch focal length. The lens is considerably larger than the F:2 Summar, thus permitting full exposure and sharpness at the extreme edges of the negative. The front element is made of special glass, which is not affected by unfavorable atmospheric conditions. The lens is highly corrected for color and has high resolving power.

New Film Viewer

• A film viewer that has caught on with a number of eastern motion picture technicians is the Ace Rotary Viewer, marketed by the Advance Cine Equipment Co. of 54 West 21st Street, New York City. Extremely portable and simple to operate, the Ace permits view of film in motion between rewinds, forward and backward action, operation at any desired speed and sharp viewing without travel ghost. It was designed particularly to facilitate viewing and handling of film by editors, laboratory workers, animators and other technicians whose work requires close inspection of 35 mm motion picture film.

Film is placed in but one sprocket roller and is then ready for operation. Passage of film through the device actuates the optical system to permit viewing of the film. There are no intermittent or oscillating parts. Film travels in an open track without pads, gates, or other pressure mediums. Both negative and positive may be run without fear of scratching. Movement is continuous and silent. A standard 11-watt lamp of 1000 hours service is used. Film can be stopped for full inspection of stills. Price of the Ace Viewer without footage and frame counter (which is

\$29.50) is \$95.

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CLOSE-UPS

Ray Rennehan: Dean of Technicolor photographers



by Rennehan, veteran member of Local 659, IATSE, th camera crew on 20th-Fox's production in Techni-lor of "Frontier Marshal," With Ray in front of cam-a are assistants Charles Bohny and Nelson Cordes.

Behind camera are Irving Rosenberg (wearing hat), second cameraman, and assistant Peter Keane. Rennehan is aiding director John Ford and first cameraman Bert Glennon on their first production together in color.

The story of color can never be told without mention of the me of Ray Rennehan. Graced with professorial white locks at befit his status, Rennehan is the dean—and by no means, peritus—of color photography. Pioneer, as first man to shoot chnicolor in Hollywood; mentor, as one who has initiated many to color photography; artist, as one who has a number of outinding productions to his long list of credits; Rennehan still going strong and now busily engaged in contributing to the rrent new rush to color. He is at present working with John ord and Bert Glennon, the director-photographer team of "Stageach," on "Frontier Marshall" at 20th Century-Fox.

Today in Hollywood. result Technicolor's great progress in

ntrol of its three-color process—still the only proven practical stem for consistency in production and delivery of quantity lease prints—the greatest era of important productions in color thoroughly under way. Technicolor cameras are at a premium. ne lighting equipment manufacturers—Mole-Richard and Bardell-McAlister, whose new lamps are contributing to better color iotography—are behind schedule in delivering new lamps for

e color rush.

This new color spurt is marked by orderly procedure and an sence of the hysteria that has been evident in previous technical ends. Another evidence that the picture industry is growing up. roducers today use color to enhance basic dramatic values, rather an as a spectacular plaything, a new bauble to be tossed to the tying public. On such solid grounds the future progress of plor can move with steady footing. Experts of Technicolor and ajor companies now agree—the result of profiting from past

experience—that color should be handled as closely to black-andwhite technique as possible. Ace Technicolor cameramen like Rennehan, today are seeking to assist studio camera crews in keeping the particular personality of their monochrome technique.

As much as possible, and as rapidly as possible, regular production camera crews are being familiarized with color procedure, so that the eventual ideal may be realized of freeing color production from restrictions, just as monochrome has been freed from the limitations of the microphone. There are a lot of sensiblehard-headed people in the picture business who see color as eventually an important routine aspect of most production. To such thinkers, this new trend in practical production routine, along with no longer skeptically regarded hope of radical improvements in three-color processing in some near future, are heart-

Typical of the ace cameramen who have stayed with Technicolor through the ups and downs of pioneering against often heart-breaking obstacles, Rennehan is as devoid of bombast as a retired baseball player. It was his good fortune to expose the first Technicolor film ever shot in Hollywood. That was when C. A. "Doc" Willat, known to many IATSE members, hired him on a three week guarantee in 1921 to shoot some tests of the then new color system, which was one of many and rated no more important than last week's headline. It was then a double-aperture split beam system covering two frames on one film with dual color separations.

Rennehan has been shooting Technicolor ever since. He has

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been through the jumps from arcs to inkies and back again. From bipacks to the present highly advanced three-color separation imbibition system. From slow to faster and the present most satisfactorily fast films that allow depth of focus, with lower light levels. After nearly three decades of seeing values tossed to the wind, and of observing a procession of hard-won technical triumphs through cooperation and hard work, you don't kid yourself and neither do others. Rennehan at work presents a paradoxical combination of relaxation and alertness. He is confident but cautious and neither one or the other too much. Maybe he started that way as a tyro or maybe he learned it. Native or acquired, it's a valuable asset under pressure of motion picture production demands.

Since 1921, in productions, special experiments, makeup tests, etc., the color footage that Renuehan has exposed runs into the millions. He even managed to come out with flying colors on the well-remembered first important color feature from abroad, "Wings of the Morning," on which—believe it or not—it was the first picture, monochrome or color, for the director, assistants, etc., of the production staff with the exception of the producer, Bob Kane, and himself. This picture was made before Technicolor's British lab was complete and everything, including tests. had to be sent to America for processing.

Color's pioneer photographer was a charter member of Local 659, IATSE. Not politically inclined, he has never run for office of any sort. Like most members, he started in the lab, with the old National Films, in 1918. He worked up from lab to assistant and his first assignment was with the well-remembered Harry Aiken at Triangle. After the war he was active in a pioneer ventures in documentary films and photographed many two-reel comedies before he got his opportunity in color.

Born in New Mexico, and educated in Las Vegas parochial schools, he came to California in the 90's as a youngster and completed his education in San Bernardino high schools, where baseball was his favorite sport. Knowing what he wanted, he picked photography as a life-work in preference to college training. He has been at it satisfactorily ever since from the early days when he photographed the first color feature, "Wanderers of the Wastelands" and special color inserts for "The Ten Commandments" and "Ben Hur," to his present assignment with Ford and Glennon on their first venture into color productions—GIB.

TRADEWINDS

Ny Zeiss miniature camera; Leica's synchronizer system; Eastman Cine-Kodak extension tubes; Canady recorders al film phonographs improved; Bausch & Lomb Filmorator; Phonotone's recording galvanometer; Agfa's light unit.

Tenax I Pocket Camera

a little instrument not much bigger than an existre meter, that makes 50 pictures an inchagure on 35mm Contax daylight loading spools. Mt unusual feature about the camera, aside fra its size, is the lever under the left forestire. A short throw winds both the film and hishutter, and a touch of the right forefinger as the picture. Not only does this make for trest convenience in general photographic with only does this make for the picture of the picture can be taken at the rate of bout one per second without difficulty, it also nes possible rapid series shots.

he lens is a Novar F3.5 of 3.5cm (1%-in.) foll length. This short focal length gives tremdous depth of field. For instance, when focal dat 8 feet and stopped down to F.16, the deh of field extends from 4 feet to infinity.

he shutter is Compur, with speeds from 1 to 1,00th second, and bulb. The Tenax I is fitted we an eye-level optical view finder of large size. A e-winding device is provided for use when but than Contax spools are used, and the camera an exposure counter. The lever winding device actuates a lock to prevent double exposures missed frames. Since there is no need to turn 1 camera for vertical shots, only one tripod set is provided. Dimensions of the Tenax 1 at 134"x2½"x4½". Its weight is 12 ounces, and 1 price is \$60.00.

Leica Flash Unit Model VI

In the new Leica Synchronized Flash Unit Vlel VI, by means of an ingeniously designed peplate, synchronization is effected by the mechm of the camera itself and there are no exe al synchronizing heads, devices, or connectivities required. Battery case attaches directly he special baseplate of the camera by means dove-tailed slider which holds it rigidly in tion. Flash bulbs are readily inserted and oved from the socket which is of the spring y. To allow for flash bulbs of different sizes, ector may be placed in either of two positions. Amall test lamp, located in neck of lamp socket, as a pilot for effecting synchronization. ng of the lamp may be advanced or retarded small adjusting screw on the special basee. Tripod bushing in end of the battery case nits unit to be used on a tripod. After battery e, lamp socket, and reflector are slipped off le-tailed slide, camera may be used in the mal manner without removing the special plate. Since current flows only during time tter release button is depressed, there is no ger of inadvertently flashing a fresh lamp by inding the camera shutter and advancing film. del VI lists at \$28.50.

Cine-Kodak Lens Extension Kit

New fields in small-object photography are ned up for Magazine Cine-Kodak owners by it of lens extension tubes for this camera, just ounced by the Eastman Kodak. The tubes be used singly, to obtain extra extension of 1, 2 or 4 inches, or fitted together to obtain examinum added extension of 7½ inches. With

rn to Page 25 for pictures of new oducts referred to by numerals.

Color Series Postponed

The editors of International Photographer announce with regret that we must again postpone continuation of our series on modern color systems in the 35mm field. Like most material appearing in the magazine, this series is dependent upon the cooperation of a number of members of Local 659, and other technicians in IATSE studio locals. Current production activity and a number of location assignments have prevented a number of important contributors from participating in work on articles for the series, which will be resumed as soon as is conveniently possible.

all tubes used together, the standard 1-inch f.1.9 lens covers a field about 3/64 inch wide. In addition to the 1-inch f.1.9, any accessory lens for the Magazine Cine-Kodak fits the lens tube adapter. Retail price of the tube kit, including instructions and exposure tables for use of the ontfit with black-and-white film and Kodachrome, is \$27.50. The tubes must be used with the Focusing Finder for the Magazine Cine-Kodak.

4) Canady Recorders

• Success of the new models of Canady recorders and film phonographs manufactured by the Cleveland, Ohio, concern has resulted in expansion of the firm's Paris, France, branch, to expedite deliveries throughout Europe and the Far East. Despite current war rumors, Don Canady, head of the firm, and a veteran IATSE member, sailed last month for Europe, to supervise the expansion. Illustrated on opposite page is the new Canady recorder equipped with galvanometer. The film drive has been improved and all unnecessary rollers have been eliminated so that the film flows through the machine without wows or flutter. Similar drive is used on the film phonograph. Also illustrated is the tiny Canady glow-lamp for 16mm recording, by comparison with a standard-size cigaret.

Hoefner's New Location

• Fred Hoefner, long known to studio technicians for his precision machine work, expects to be located in his new shop at 915 North Cahuenga Boulevard, Hollywood, the latter part of this month. Hoefner for years was located at 5319 Santa Monica Boulevard.

5) B & L Filmorator

• A new chrome-plated accessory, called "The Filmorator," for use with the Bausch & Lomb Film Slide Viewer, has just been introduced by the company to make easy the study of 35mm strip film negatives or positives. The chrome-plated rack is equipped with a button by which the film can be moved exactly one frame at a time, without scratching. Filmorator makes it very easy to examine a roll of 35mm film within a few minutes and to determine whether contrast, composition, definition, or any other photographic characteristics, make the negative worth enlargement in whole or in part. Film may be examined indefinitely and left in the viewer for

days without being affected since the heat nowhere approaches the intensity of a projector. The new accessory will sell for \$3.00.

6) Phonotone Recording Galvanometer

● Phonotone Laboratories, Photographic equipment manufacturers of Washington, Indiana, have just completed a new recording galvanometer for 16 mm and 35 mm use. A versatile general purpose galvanometer it is very compact; entire unit weighing only 13 ounces. A small knurled knot is located on the back, by means of which the unit may be set for variable density, variable area single, or bilateral tracks at option of user. Power consumption for full modulation of the track is less than 1 watt and frequency response to 8500 cycles. Housing is of aluminum. Two models are available; multi-track unit at \$149.50 and single side variable area unit at \$97.50.

7) Portable Light Unit of New Design

• "Agfalite," new and ingenious piece of lighting equipment has just been introduced by Agfa Ansco Corporation to solve the lighting problems experienced by many still photographers. Ease of manipulation, effectiveness in providing light from high or low levels, and compactness for transportation in its sturdy steel case, are outstanding qualities of the Agfalite. An important construction feature of the new Agfalite is a pantograph mechanism which allows it to be set up and adjusted on a moment's notice. The pantograph is anchored to base of carrying case and provides an extensible support for the light sockets and reflectors so that the lights may be placed at any position up to 94 inches above floor level. Because of a built-in counterpoise spring mechanism, it is not necessary to fasten or secure the pantograph at the desired height for it remains at the selected position. Further vertical adjustments can be quickly made simply by moving the lights up or down to a new posi-

Agfalite is equipped with two sockets mounted independently on sliding bars at top of pantograph mechanism to permit horizontal adjustment of spacing of two lights. Distance between centers of the lamps may be varied from 11 to 36 inches. Agfalite is designed to take No. 2 size floodlamps and is furnished with two adapters to permit use of No. 1 lamps as well. Reflectors are of a special design to promote even distribution of light. Other mechanical features of Agfalite include caster supports that fit the base of unit to make it easily moved across floors, approved underwriters cord with separate outlet plugs, and diffusion screen that can be attached when softer lighting is desired. Unit is supplied in brown crackle finish with pantograph and caster frames in nickel finish. It is made in U. S. A. and available through photographic dealers at the list price of \$25.

Eastman's Hollywood Processing

• With the construction of a new building in Hollywood well under way, Eastman Kodak Company will bring to the coast additional service in the processing of Kodachrome film by early fall. For more than a year 8 and 16 mm Kodachrome for amateur movies has been processed by Eastman in Hollywood. In the new plant there will not only be greater facilities for handling amateur film but also the processing of 35 mm Kodachrome used in miniature "still" cameras such as Kodak Retina, Kodak 35's and Bantams and Professional (cut film) Kodachrome. It is now necessary for "still" cameramen on Hollywood lots to send their 35 mm or Professional Kodachrome shots to Rochester for processing.

Agfa Twin Eight Hypan

• Twin Eight Hypan, new reversible film especially designed for use in Double 8 cameras, has just been added to the line of Agfa motion pic-

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ture films. This new emulsion is three times faster than Agfa single 8 mm films and combines exceptionally fine grain and brilliance with very high speed. This combination of emulsion characteristics enables taking of movies of numerous subjects heretofore beyond the range of 8 mm cameras. Twin Eight Hypan provides a balanced panchromatic color sensitivity that makes it suitable for use in daylight or artificial light, wide latitude that minimizes exposure errors, unusual resolving power and brilliant gradation. Halation protection is supplied by effective coating used on other Agfa reversible films. Made by Agfa Ansco Corporation in Binghamton, New York, U. S. A., Twin Eight Hypan Reversible is supplied in 25 foot spools (containing 50 feet of 8 inm film) at list price of \$2.25, which includes processing at any authorized Agfa laboratory.

Speedy Slide Binder

Candid Camera Corporation of America, 844 W. Adams Street, Chicago, manufacturers of Perfex Forty-four camera, is now marketing a new type of 2x2 inch slide binder, known as the 1-2-3 Speed Binder, which consists of an accurately die cut piece of metallic surfaced paper which acts as a support for the glass, as a mask for the film and as a tape for the binding. The unit is all in one piece. Film positive to be mounted is properly centered over the mask opening where a gummed tab holds it in place. Glass sections are then folded together and protruding gummed flaps are folded over and sealed to complete the slide. It simplifies slide making and reduces the work of minutes to seconds. Bright metallic surface of the paper reflects heat, tending to protect slide from heat damage. Sample sent by the makers to International Photographer was favorably rated by member of studio photographers who inspected it.

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Duplicate Transparencies

• Duplicate transparencies in color can now | made from most Kodachrome "stills" at mode cost by the Eastman Kodak Company. Thirt five-millimeter duplicates, for screen projection or enlarged duplicate transparencies up to 11x inches can be made from original Kodachrom taken with a miniature camera. In addition "same-size," enlarged, or reduced-size duplicate can be made from most sizes of Profession Kodachrome Film transparencies. Miniatur camera originals may be submitted either mounte or unmounted for duplication, the order beit placed through any kodak dealer. Duplicates for projection will be returned in 35mm Kodaslic Ready-Mounts, ready for use, unless the ord indicates otherwise. If desired, miniature dupl cates may be reproduced in sequence on fil strips, provided all originals are the same size Details and complete price schedule may be o tained from kodak dealers or by writing to tl Eastman Kodak Company at Rochester, No

Agfa 20-Exposure Leica Cartridge

● Users of Leica and similar 35mm miniatu cameras who prefer film lengths shorter the standard 36-exposure load, will be interested the new 20-exposure Agfa film cartridge that h just been introduced. Available in five popul types of Agfa 35mm film — Fine-Grain Plen chrome, Superpan Supreme, Ultra-Speed Panchi matic, Finopan, and Infra-Red—the 20-exposulength is supplied in the same improved-type dalight-loading cartridge used for 36-exposulengths of Agfa film. These new film cartridgare now in dealers' stocks and are listed at following prices: Superpan Supreme, Finopan at Ultra-Speed Pan, 65c each; F. G. Plenachrom 60c; Infra-Red, 75c.

Triple S Superpan Reversible

• After extensive research, Agfa Ansco now i troduces Triple S Superpan Reversible, a ne 16mm motion picture film that provides extreme high speed without sacrifice of other desirab emulsion characteristics. The new film is for times faster than Agfa 16mm Superpan Reve sible, and accordingly, permits two lens sto less exposure or a corresponding increase in su ject range for any camera in which it is use Because of its extreme speed, Triple S Superpo is ideal for outdoor and indoor night scenes, f slow motion films of football, baseball, hockey ar other sports in poor light, and for a wide ran of other subjects which have heretofore been b yond the reach of cine equipment. The new emu sion combines with its high sensitivity, exception ally fine grain and brilliant gradation, thus assu ing clear, sparkling pictures on the screen. La tude of the film is also excellent. Halation pr tection is provided by the effective underlay used on all Agfa reversible films. This extreme fast Agfa film is available at prices that set new low for premium quality films. 100 fo lengths of 16mm. Triple S Superpan Reversib list at \$6.00, 50 foot lengths at \$3.25, including processing by any authorized Agfa laboratory.

Argus Developers Ready

◆ After months of painstaking study and experment, International Research Corporation a nounces a new line of fine grain film and pripaper developers. These chemicals carry the Argus name and are said to match up in every way to the high standard of quality set for a Argus photographic equipment. Actual development work on the new Argus chemicals was carried out by the Chemical Engineering Division the Swann Chemical Company under supervisit of the research department of International Research Corporation. The Swann Chemical Corpany enjoys an international reputation for nedevelopments in the chemical field. When the work was completed, Argus photographers at dark-room specialists made the hundreds of testo "prove" the new Argus developers. The fu



line consists of Argus A.R.-1, fine grain developer; Argus A.R.-2, a universal film and paper developer; and the Argus A.R.-3, a paper developer. These chemicals will be packed in convenient quart size bottles in attractive cartons with complete instructions for their use. These developers, offered at remarkably low prices, will be sold through all authorized Argus photographic dealers.

Kalart's Flash Manual

● The Kalart Company has available to all photographers interested in speed flash work a new illustrated pocket-size 36-page manual on the subject. Instructions for the use and adjustment of the Micromatic Speed Flash with all types of cameras is very complete and the manual has a number of samples of effective flash photography with complete date. Also included are exposure charts in which are listed films, flash bulbs and shutter speeds at given distances. Copies will be sent on request to the Kalart Company offices.

British Royalty's Visit

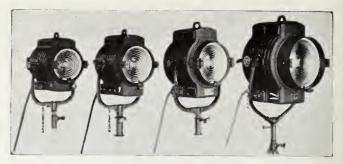
• An exclusive, deluxe 16mm film presentation of the visit of Britain's King and Queen to America is being made available to only 100 people throughout its world-wide distribution by Bell & Howell. Three reels comprising this limited Bell & Howell release contain footage taken by ten ace camera men at all stages of the history-making journey of England's monarchs. The films are mounted on three beautifully gilded reels contained in similarly gilded humidor cans. These, in turn, are housed in a beautiful library container. While limiting this deluxe three-reel edition to only 100 copies, Bell & Howell announce that they will continue to supply all demands for the single reel edition of the royal visit released by Castle Films. For complete information regarding either edition write Bell & Howell Company, 1801 Larchmont Avenue, Chicago, Ill.

Robot Film Rewinder

• Of interest to all Robot users is announcement of the new "Robot Film Rewinder" by Intercontinental Marketing Corporation, New York. A chamber made of plastic material takes film wound on any standard 35mm cartridge and permits transferring this film into the magazine of the Robot II, and vice versa, in plain daylight. This way, the owner of a Robot I may load his camera with any type of film, including Kodachrome, and may rewind this film into the original cartridge without requiring a darkroom or changing bag. Device also serves as a carrying case for two loaded spare magazines, furnishing a reserve supply of film sufficient for 100 Robot pictures. The Film Rewinder is smooth, and small enough to be carried in a vest pocket or in a lady's handbag.

Perutz Gets New Developer

● Exclusive rights to manufacture Ultra Fine Grain Developer W665 have been acquired by Otto Perutz, represented in the USA by Intercontinental Marketing Corporation, New York. This developer is compounded according to the "Hans Windisch formula" and is described in the photographic handbook, "The New Photo School," by Hans Windisch. It combines advantages of Parapheniline-Diamine formula with nontoxic and non-staining characteristics. In using the time table packed with every can of developer, all developments may be carried through to the same gradation. Each can giving 20 ozs. of developer is sufficient to develop approximately 80 feet of 35mm film (15 rolls of standard cartridges) without any change in developing results. Working temperature is recommended to be at approximately 65 degrees, but variations from this temperature are possible without noticeable changes of the result.



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By ROBERT W. FULWIDER

MONTH the following patents of interest to eers of International Photographer were sed by the U. S. Patent Office. These selecic and brief descriptions of new patents were hard by Robert W. Fulwider, well-known Le Angeles attorney, specializing in patent and ree mark counsel.

N 2,156,440 — COMBINATION TIME LAPSE AND HOTOELECTRIC EXPOSURE CONTROL MECHANISM. linton P. Veber, assignor to Endowment bundation, New Brunswick, N. J. Application ug. 18, 1937. 48 claims.

Vevice for taking lapse time pictures in which hlight reflected from the subject automatically crols the length of exposure.

N 2,156,814—METHOD OF PROJECTING MOTION actures in Natural Color, Robert T. Kill-an and Thomas A. Killman, Nashville, Tenn. pplication Dec. 21, 1936. 4 claims.

Anethod of projecting pictures in color in which v images in color are simultaneously projected a screen and then projecting one image of pair with one image of another pair by means of light of a third color.

N 2,156,862—Mount for Cinema Cameras, rc. Adolfo Best Maugard. Mexico, D. F., Mexo. Application Mar. 18, 1936. In Mexico lar. 20, 1935. 6 claims.

amera mount having a counter-balanced beam vided with a frame hanging from one end of beam to adjustably support the camera.

2,157,099—OPTICAL SYSTEM FOR STEREOSCOPIC LOTION PICTURE PRODUCTION AND PROJECTION. harles G. Rosenhauer, N. Y., assignor of onealf to Armand E. Lackenbach, N. Y. Applicaon June 1, 1935. 6 claims.

ens system for producing stereoscopic motion ures which makes use of a pair of plano-conlenses in front of a single anastigmatic lens a pair of prisms.

2.157,138—METHOD OF AND APPARATUS FOR ROBUCING STEREOSCOPIC PICTURES. Ciro Fidel lendez, Mexico, D. F., Mexico. Application uly 8, 1936. 2 claims.

nethod of producing stereoscopic pictures by ically distorting the image, and then projectthe distorted image upon a plane screen and ecting it to a concave cylindrical surface.

No. 21,082—Stereoscopic Picture. Milton Idzal, Sioux City, Iowa. Original No. 2,001,-24, dated May 14, 1935. Application for re-sue May 12, 1937. 3 claims.

tereoscopic picture with right and left views right and left apertures in front of it, ecrically mounted targets in each aperture on isc, and means for rotating the discs.

2,158.174—Film for Photographic Color ROCESS. John G. Capstaff, assignor to Eastman odak Co. Original application Oct. 28, 1936. vivided and this application Dec. 30, 1937. 4 laims.

olor film having differently sensitized emullayers on one side, lenticulations on the other and a removable transparent surface coverthe lenticulations to produce a plane surface.

2,158,186—Toning and Intensifying Solutons. Kenneth C. D. Hickman and John C. ecker, assignors to Eastman Kodak Co. Ap-lication Mar. 9, 1938. 6 claims.

process of intensifying and toning a developed by treating it in a bath containing hydronone thiosulfuric acid.

2,158,194—Photographic Material. Alexaner Murray, assignor to Eastman Kodak Co.

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A sensitized element comprising a thin, translucent, elastic sheet of vulcanized rubber, a thin layer of metal foil removably secured to one surface of the rubber sheet and a photographically sensitive layer over said metal foil.

No. 2,159,280 — Sound Image on Multilayel Film. Leopold D. Mannes and Leopold Godow sky. Jr., assignors to Eastman Kodak Co. Ap plication Sept. 18, 1937. In Great Britain Dec 31, 1936. 3 claims.

A process of forming a sound track on a multilayer color film in which the lowermost layer of the sound track is first completely exposed and developed, and the sound track is then printed and developed in at least the uppermost layer.

No. 2,159,372—Speed-Changing Adapter for Mc tion Picture Camera. Fritz Brosch, Los An geles, Calif. Application Apr. 27, 1938. claims.

A speed-changer for the film-advancing means a a motion picture camera, in which a number c cams and a pin cooperate to move the actuate shaft a greater or lesser amount.

No. 2,159,420—APPARATUS FOR COLOR CINEMA TOGRAPHY. Andre Blondel, Paris, France. Application June 8, 1935. In France June 11 1934. 5 claims.

An apparatus for copying lenticular films by projection making use of an objective lens and thre relatively weak correcting lenses.

No. 2,159,600—Production of Composite Phetographic Images. Humphrey Desmond Murra and Douglas Arthur Spencer, England, assignors to The Veracol Film Syndicate Limited London, England. Application Feb. 2, 1937, 1 Great Britain Feb. 6, 1936. 15 claims.

A method of developing the lower image of a emulsion having two superimposed images, b means of a depth color developer.

No. 2,159,683—Process for the Production of Photographic Pictures in Natural Color in Accordance With the Three-Color Priciple. Marcelle Beauvais, France, assignor to Simeon Papadakis, St. Maurice (Sein), Franca Application Sept. 1, 1936. In France Sept. 1935. 2 claims.

A process for producing color pictures which is cludes making a print from one color separation negative on a positive film and dyemordanting this image, resensitizing with bichromate and printing and dyeing a second image from a second separation negative, and resensitizing, printing, and dyeing an image from the third separation negative.

RE. 21,099—Process for the Production of Colored Sound Film. *Bela Gaspar*, Brussel Belgium, Original No. 2,025,658, dated Dec. 2 1935. Feb. 21, 1933. Application for reiss Mar. 28, 1939. In Germany Feb. 19, 1931.

A method of producing colored motion pictu films in which the picture is formed of a dyestr only and the sound track consists of a silv image

No 2,160,340—METHOD AND DEVICE FOR OBTAI ING OR REPRODUCING COLOR PHOTOGRAPH Charles Nordmann, Paris France. Application Oct. 5, 1936. In France Oct. 7, 1935. 5 claim A method of copying a lenticular film having redetermined absolute apertures upon a secontifilm having equal absolute apertures by making the copy film thicker so as to make its relating aperture less than the relative aperture of the original.

No. 2,160,716 — DIAPHRAGM FOR LENTICULATIFILMS. Andre Blondel, Paris, France. Origin application June 8, 1935. Divided and this a plication Dec. 30, 1936. In France Nov. 1

1934. 4 claims,

A method of making a diaphragm for use wilenticular films in which an outline of the si of the picture is projected to the plane in which the diaphragm is to be located, and a diaphragis made from the projected outline.

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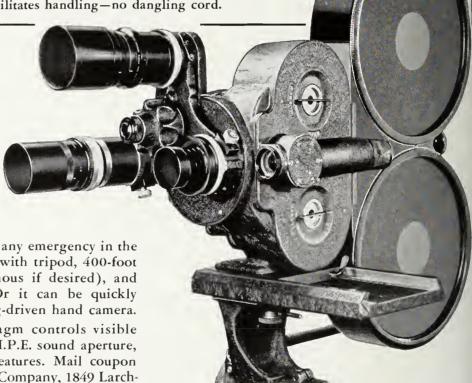
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International photographer

Vol. 11

August, 1939

No. 7

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On the Cover

Frank Capra, photographed by Irving Lippman, stillman member of Local 659, IATSE, on the set for Columbia's "Mr. Smith Goes to Washington." Turn to Pages 10-11 for pictorial layout of stills from the exploitation shots made hy Lippman for the production.

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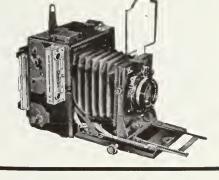
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International HOTOGRAPHER

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roblems in REAR PROJECTIONS

luable suggestions for shooting keyplates and computation of factors in wild key plates to accurately insure to background scenes appear correctly in finished shots; speeds up operation in photography on the set.

By LEE CARROLL

DACCORDANCE with its policy of presentcontinuous series of related articles such important subjects as color, rear pjection, projection, backlot equipment, and equipment, laboratory practice and led subjects in addition to our basic torial fare of motion picture and still ptography news, we herewith resume on subject of rear projection Since icles in these various series are the rult of cooperative effort by working sidio technicians, we again must express regret that we cannot positively guaree continuity of publication in a series any particular subject It is, hower, the intention of the writer of this icle to follow up with a general dission of minimum requirements and tips rear projection in an early issue. Such liscussion should prove a valuable adict to the basic equipment minimum cifications for rear projection work, al down for the industry by the Academy Rearch Council, full text of which was polished in the March, May, 1939, issues INTERNATIONAL PHOTOGRAPHER.—Ed.

ROBLEMS IN REAR PROJECTION PROCESS

HE FOLLOWING is a method by which kground projection in motion picture on can be made to appear correctly in finished shot. This method can and sluld be started from the key plate shot. It wever, the unknown elements of the key pe can be determined even when the primation is not available though this as more time and is a difficult feat to form accurately, particularly on scenic start. The following paragraphs contain a neral procedure by which to approach piction background.

Sction 1: THE KEY PLATE CAMERA

or the best reproduction, the key plate all all be shot with certain points kept in mind other than those laid down by script. Regardless of what the script is for, there are some things which can be ignored. First, unity magnification

Carroll and Physioc

Writer of this article, Lee Carroll, a studio veteran with considerable film editing experience, has been working recently with Lewis Physioc at Technicprocess in experiments to solve certain problems in rear projection and to strike a common ground between the rear projection concern and production executives on basic points for most effective results. The article is the product of extensive experiments on a scientifically accurate miniature stage. Physioc is well-known to members of Local 659 for his contributions to the industry and his articles in International Photographer for many years. An excerpt from his unpublished book, "From Script to Screen," is part of Carroll's article.

is of utmost importance. Unity magnification is simply this: The figures or objects on the screen should never appear larger than life size when real actors appear in front of the screen. The general rule to follow is never to have the closest object in the foreground appear larger than life size when projected on a 16'x20' screen.

The key plate cameraman can determine how close he can set his camera to a figure or object to have it appear life size on any of the standard size screens by referring to Chart A. Looking at the vertical left column, the focal length of the lens may be selected. However, key plate shots should never be made with a lens of longer focal length than three inches which will be explained in a later paragraph. Going back to Chart A, the first horizontal column shows the various standard screen sizes. By selecting the lens and the screen size, we may read across and down the columns noting the footage at which the closest figure or object to the camera will appear life size. To photograph an object or figure closer to the camera than the footage shows on the chart will make it appear too large in proportion to the actors performing in front of the projection background. If the object or figure is farther from the camera than the footage as shown on *Chart A*, the object will naturally appear smaller than life size which merely lends an illusion of distance. It is well to bear in mind that unless the screen size is known beforehand, it is better to always photograph for the 16'x20' size screen in as much as the objects will appear smaller on the smaller screen

The key plate cameraman is now in a position to start his shot bearing one other important point in mind The camera angle which he selects being tilted either up or down from an absolute level position will necessitate placing the camera on the process stage at the same angle. This will also be more thoroughly explained in a following paragraph.

The key plate cameraman can greatly speed up the process stage set-up by recording at the end of each shot the following four important points: the size screen he has shot for, the focal length of the lens, the angle tilt of the camera, and type of camera used—Bell and Howell or Mitchell It is recommended that this information be photographed, by means of a small blackboard, at the end of each shot. For reasons to be explained also in a later paragraph, it is recommended that key plate shots be made with the full aperture rather than with the Academy aperture

Section 2: Determining Unknown Key Plate Information

The measurements being so minute on the motion picture frame it is advisble to use some type of enlarger to obtain a frame of convenient size, such as 8"10". The foreground object or figure can then be measured and the calculations for the screen size can be figured thus: 8"x10" being the enlarged size, if a known object such as a doorway which in real life is 72" in height measures 4", the height of the screen can be determined by this simple formula:

4'':8''=72'':x

		8' x 10'	10' x 12'	12' x 16'	16' x 20'
LEIS	27	201	241	321	401
	3"	301	361	481	601
	4 ¹¹	401	48 †	64'	801
	4 1 n	45 '	54'	721	901
	5"	501	60†	801	100'
	5 1 °	551	66'	881	110'
	6 п	601	721	96'	120'

FOOTAGE SCALE FOR DISTANCE

FROM LENS TO SCREEN

CHART A

Thus, the height of the screen being 12', a 12'x16' screen is used for proper unity magnification. The next step is quite difficult to do on purely scenic or landscape backgrounds because it is hard to find definite lines leading to the vanishing points. Few people can recognize the proportion between rocks and trees on this type of background. Architectural subjects require particular care because even the laymen are so familiar with such subjects that they can readily trace the vanishing lines and become conscious of the horizon and vanishing points; and the slightest error in the convergence of these lines becomes very apparent.

Chart B is the mapped out plan showing how the measurements are brought about. Draw the lines a and a' until they intersect at the horizon. This is the vaning point marked, v.p.¹. Draw the lines b and b' until they intersect at their respective vanishing point, v.p.2 Establish the horizon, H by connecting v.p.1 and v.p.². Describe an arc or construct a half circle with c as the radius and the vanishing points the diameter. The picture is then divided in the center by the vertical line e and this line is carried down to where it intersects the arc d at the point marked f. Connect f with h and h'. The lines marked g and g' represent the visual angle of the lens which is to be further proved.

This may be further proved in the following manner. With v.p. as a point describe an arc from f to the horizon which point is marked measuring point, m.p.; and with v.p. as a point describe

the arc to m.p.². From m.p.² draw a line to the right-hand lower corner of the picture, k; from m.p.1 draw a line to the left-hand corner of the picture, k' The sum of the angles 1 and 1' equal the angle m. If n and n' equal the motion picture horizontal dimension, then o-f equals the focal length lens used This entire procedure may be done in the enlarger by drawing the vanishing point lines a and b, establishing the horizon line h, establishing the four corners of the picture, and doing the rest of the calculations from those points without further use of the enlarger. It may readily be seen that to establish the camera angle, the distance the horizon line moves above or below the dividing line of the picture gives the exact tilt of the key plate camera.

Careful note should be made as to the type of camera used in photographing the key plate: whether it was the Bell and Howell or Mitchell. It is essential that if the key plate was made with the Bell and Howell camera, it should be projected with the pins in the Bell and Howell position at the top of the aperture, the large register pin at the right. If the plate was made with the Mitchell camera, it should be projected with a movement having the pins at the bottom. A note can be made while the print is in the enlarger concerning whether it is full aperture or the Academy aperture.

In summing up, unity magnification, the focal length of the lens, the camera angle, the type of pins, and the size aperture that the key plate was shot with have been established, which is the same information

that can be recorded by the cameraman as stated in the preiovus section. But it may readily be seen that this second method takes time and much trouble to work out and can be entirely avoided if the key plate cameraman records the necessary information at the time the key plate is shot.

Section 3: Contrasts of the Key Plate The key plate print should always be printed on Bell and Howell perforations The natural tendency of the film in rephotographing the key plate is to increase its contrast. A normal print, therefore appears much too contrasty in relation to the actors or scenic foreground placed in front of the projected background. To overcome this the print should be made similar to a lavender In other words to obtain the same effect, the print should be printed a couple of points heavier or the printer and developed to a lower gam ma than a normal print would receive To the eye this print appears somewha lacking in contrast but should show al of the detail. The glycin formula is recommended for the developing of the key plat for the following reasons: it precipitate a fine grain, it develops richness in th highlights, it has brilliant transmission qualities and rich detail in the shadow without blocking them. Following is th glyein formula:

Potassium Bromide solution

The negative should be of normal gan ma but the positive should have a cor siderably lower gamma.

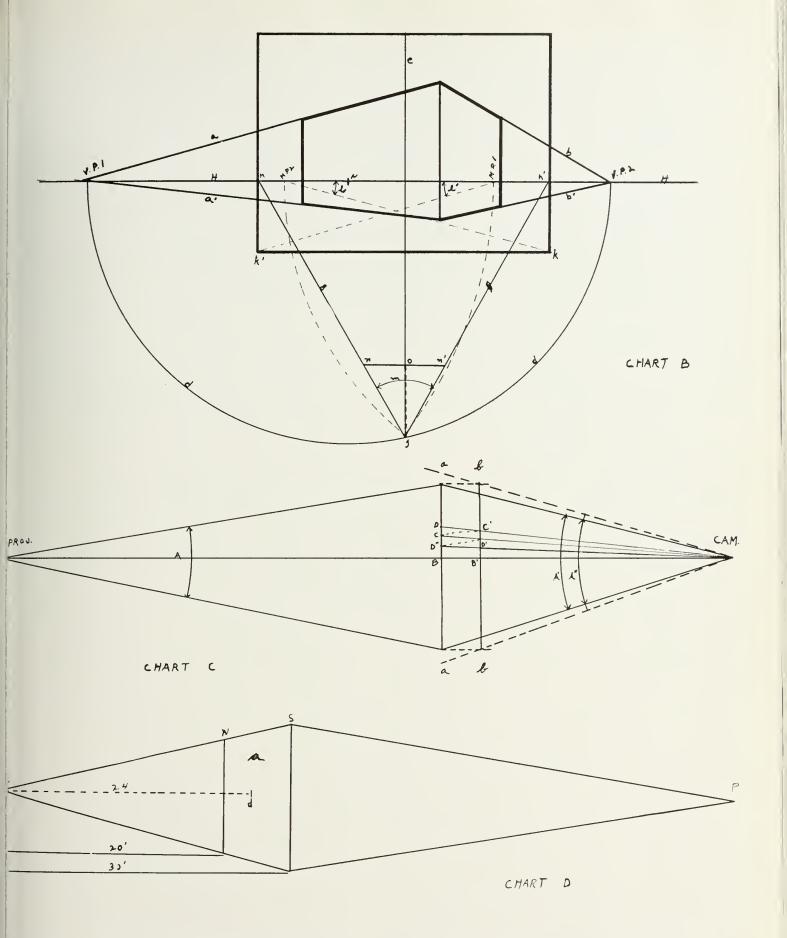
Section 4: The Set-Up

With all these vital elements having been predetermined, the operation should be to go on the set and get started with the least possible difficulty. With proper direction, the efficiency of such a method is so greatly increased over the "I hop it looks right" system, that it is boun to save many dollars in production cost

With this information, the process director can step on the stage, line up with minimum of delay, and by referring the Chart A, he can determine the distance according to the focal length of the lensiplace the projector for the size screen howishes to use, and check for unity magnification. He may then further check be calculating the foreground objects to those of the projected picture.

The selection of lens for the projecte has some important points which it woul be well to mention. A long focal lengt lens greatly decreases some of the hot spe trouble but gives a flatter focal field.

Focusing the projector on the screen carbest be done by standing close to the screen and as the operator focuses the lens, watch for the prismatic color colditions on each side of a minute point of the screen until they show equal balance



is greatly facilitated by the recent lication of remote control focusing. /ith the screen and projector placed, next logical step is the placing of the era, and around this step converges alof the important points brought up in

the previous sections. The first consideration is how far the actors can be placed from the screen and still keep them from magnifying out of proportion to the unity magnification of the key plate.

"Chart C, which is from the unpublished

"From Script to Screen," by Lewis W. Physioc, shows how this difficulty may be obviated, at a slight sacrifice to perspective unity. This sacrifice, however, is almost negligible, and is compensated by maintaining the more important matter of

scale. Angle A represents the projected picture; B is the plane of the translucent screen; A' is the angle of the lens copying the projected picture, reproducing the same, normal proportions as at B. The distance between B and C represents the image of an object of known dimensions (height of a man, or such) on the screen. By studying the chart of hyperfocal distances, the distance between B and B' is determined, being the distance at which the action may be placed so as to maintain fair definition in the projected picture while focusing on the action. The distance between B' and C' represents the dimensions of the actual object as posed in front of the screen; however, if the projected picture is photographed with the original lens (of augle A), B' and C', being so much nearer to the camera, will be magnified so as to appear as B and D, which will be out of perspective scale with the projected picture. By selecting a lens of wider angle (shorter focal length) A", the same sized picture is produced at the forward plane b. b', B'. Now. knowing that the leus of wider angle diminishes objects in the background in a greater perspective ratio, the distance between B and

B' is just sufficient to reduce the projected dimension B-C so as to appear as B-D", which will be in correct perspective proportion to B' and C'.

"The dotted lines of the angle A" might suggest an embarrassment in overshooting the screen as at a and a'. This, however, is obviated by the happy proviso of being able to photograph the original 'key shot' with the former silent aperture and re-photographing with the sound aperture. Where conditions require too much overshooting of the screen, the area shown at a and a' may be covered by additional set construction in the foreground."

The focusing of the lens of the camera brings up some confusing problems in the matter of depth of focus. The lighting of a process set naturally enters into these problems. It is usually difficult to use enough light to bring about much field of focus because no light can spill on the screen without destroying the projected picture. It is sometimes very confusing to know where to focus in order to have the screen in focus and the actors, particularly a large group of actors in front of the screen, covered in the depth of field. Chart D is a method by which a

great deal of the guesswork may be elim nated. In it, a, represents the area of th set: n, the nearest point to the camera the kept in focus; s, the screen, furthe point to be kept in focus; c, the camera p, the projector: d, the desired lens setting to bring n-s in focus. If n is twent feet from the screen and s thirty feet from the screen, the formula following will give the desired lens setting to bring both and s into the depth of focus field, which is twenty-four feet.

$$\frac{2 \text{ (n x s)}}{\text{n + s}} = d$$

This formula is based on the necessal field to be covered. It will be readily see by referring to a depth of focus chart (a lens, that the lighting will necessaril have to be built up to get the require exposure for the lens stop covering the desired field. From a practical point (view, by balancing the light against the area, a compromise can be made. The above formula gives the right lens setting so as not to throw the screen out of focus and yet not overlap the screen and shorte the field in front.

fundamental photographic chemistry, part 2

Second installment of another chapter of Don Hooper's successful book, "Basic Photography," published by International Photographer in answer to reader demand; presented in handy form for filing as reference material

By DON HOOPER

Numerals in parentheses in the following text refer to the page numbers on which this material appeared in the original edition of "Basic Photography." A few copies still are available. Turn to Page 19 for information."—Ed. Note.

CHEMICALS USED IN PHOTOGRAPHY

Although a great number of chemical compounds are used in photography, a comparatively small number of these are used for the great majority of photographic work. Not more than ten different chemicals are utilized for about 95% of all ordinary photographic processes, while the remaining five per cent, hundreds of different chemicals are occasionally used. The remainder of this chapter will be devoted to the description of various chemicals used in photography, giving derivations, chemical formations properties and some of their uses.

formations, properties, and some of their uses.

The light-sensitive compounds used in modern photography are the silver salts of the halogens, Bromine, Chlorine and Iodine. Each of these has its particular use, although silver bromide and chloride are used to a much greater extent than the iodide. These are prepared from SILVER NITRATE, which is the basic material from which all photographic emul-

sions are made.

SILVER NITRATE (Ag NO₃) is prepared by dissolving silver in nitrie and the following reaction taking places.

 $HNO_3 + Ag = AgNO_3 + H$ The silver nitrate is then crystallized out of solution and obtained in (34)

colorless, transparent plates. To insure the purity required for photographic purposes, it is re-crystallized. Silver nitrate is very soluble in water. It is caustic in its action, attaching organic substances, and has many applications in medicine. Organic materials treated with silver nitrate are blackened upon exposure to light.

When a solution of silver nitrate is added to a solution of a halogen salt of another element, the halogen element unites with silver to form the insoluble precipitate of the silver halide. The following reaction illustrates this:

Silver Potassium Silver Potassium Nitrate Plus Bromide = Bromide Plus Nitrate AgNO₃ + KBr = AgBr + KNO₃

The potassium nitrate, which is soluble, remains in solution while

the comparatively insoluble silver bromide falls to the bottom of the container as a curdy, creamy colored precipitate. Since this darkens upon exposure to ordinary light, the silver halides for photographic purpose are prepared in the dark or by the use of a light (safelight) which doe not affect them. Before discussing any further the chemicals used in photography, let us consider the physical properties of compounds.

PHYSICAL PROPERTIES OF COMPOUNDS: Dry chemical compounds may occur in powder or crystal form. Often the same chemical compounds may occur in powder or crystal form.

PHYSICAL PROPERTIES OF COMPOUNDS: Dry chemical con pounds may occur in powder or crystal form. Often the same chemica may exist in either form. The crystal form usually contains a considerably amount of water called "Water of Crystallization." The powder form a extremely dry and carries very little water of crystallization. Most of these crystal and powder forms are capable of changing their physical properties by receiving or giving off various amounts of water. Beloware listed the terms which designate the state in which chemicals materials.

exist.

MONOHYDRATED—When a chemical in powder form contains onlone part of the water of crystallization it is monohydrated.

DESICCATED OR ANHYDROUS—When a chemical crystal is streated that the water of crystallization is driven off from it and it appear in a dry stable form, it is then said to be desiccated or anhydrous.

EFFLORESCENT—Crystal chemicals that give off their water of crystallization upon being exposed to air and break down into powder form are said to be efflorescent.

form are said to be efflorescent.

HYGROSCOPIC—Some crystal chemicals absorb water from the aid becoming moist and much weaker in strength. These are said to be hygroscopic.

DELIQUESCENT—If crystal chemicals absorb enough water so that the crystals dissolve to form a solution they are then termed deliquescent REDUCERS OR DEVELOPING AGENTS

There are three principal developing agents in common use, although many more are manufactured and occasionally used. The principal one are as follows:

PYRO, made from gallic acid, which is obtained from gall nut

imported from China. The nuts are fermented to obtain gallic acid, which is distilled to produce the pyro. Pyro is obtained commercially in two forms: as a flaky powder and in fine crystals. Of these the crystal form is more common and desirable. When the powder forms are used greater must be exercised to prevent fine particles from being carried into the

dec rooms by air currents, because of the oxidation stain it forms on arthing it comes in contact with. Pyro, being staining in its action, is utlentirely for negative developing.

ELON, METOL, and PICTOL (Monomethyl-para-aminophenol sulpite) which are identical in composition so far as results are concerned at are made, in common with many other developing agents, principally fra coal tar. It is a white flaky powder insoluble in alcohol. Elon is used for developing both negatives and prints.

HYDROQUINONE, made from benzine, which is first converted into arline and then oxidized. It occurs in small needle-like white crystals. Ts agent is seldom used alone, being most generally found in combation with Elon. It may be used for both negatives and prints.

These agents just mentioned above are the ones most generally used. Hover, since the advent of the miniature camera and the necessity for figrain developing, such developing agents as para-phenylene-diamine (the the base and hydrochloride forms) and glycine are used to a constrable extent. Each developing agent differs in its action and a differnt formula is necessary for the use of each. (See Chapter 5.)

ACCELERATORS: As has ben stated, reducing agents must usually by in an alkaline solution so that development can take place. The alies used for this purpose are the carbonates and hydroxides of sodium a potassium, usually the former. The alkaline solution serves a double place, it not only renders development possible at a rapid rate, but seens and swells the gelatine emulsion, permitting more rapid access to be reducing agent to the entire thickness of the emulsion. The various a elerating agents are given as follows:

SODIUM CARBONATE: This is by far the most popular accelerate It is marketed in three forms: Crystals containing ten parts of wer of crystallization and 30% by weight of the carbonate; crystals ctaining one part of water and 85% of carbonate, and the dry, or anydrous powder containing 98% carbonate.

POTASSIUM CARBONATE: This alkali, which is also known as Sts of Tartar, is sometimes used instead of sodium carbonate. It is a prescription in the same manner as sodium carbonate, being obtained comprarially as a dry powder. It has the disadvantage of being very delacement and must be kept in well sealed bottles.

SODIUM HYDROXIDE: This alkali, which is also known chemically a Caustic Soda, is occasionally used in developing solutions requiring astrong alkali. Caustic Soda is a very strong alkali with a decided cornive action. It is marketed in white brittle sticks, and in little pellets, is hygroscopic and upon exposure to air absorbs carbon dioxide and yter. Therefore, it should be kept in well stoppered bottles.

POTASSIUM HYDROXIDE: This alkali, sometimes substituted for fustic Soda, is very similar to it and prepared in the same manner.

Obviously compounds which contain a large amount of water of stallization must be used in greater weights to obtain the same strength en by the powder form. Likewise those which are Efflorescent, Delicescent or Hygroscopic are of uncertain strength after having been existed to the air for any great length of time. The powder form is referable in almost all cases where chemicals can be obtained in either m. An exception being sodium carbonate, which is more stable when tained in the monohydrated form.

In compounding developers it is sometimes necessary or desirable to betitute one alkali for another. Since they are of different strengths, following table with Anhydrous Sodium Carbonate as unity indicates weight of each to be used to produce the same results:

Sodium Carbonate (Anhydrous) (slightly Hygroscopic) .	1.00
Sodium Carbonate (Monohydrated) (very stable)	1.11
Sodium Carbonate (Crystals) (efflorescent)	2.69
Potassium Carbonate (Anhydrous) (slightly Hygroscopic)	1.30
Potassium Carbonate (Crystals) (efflorescent)	1.63
Sodium Hydroxide (Caustic Soda) (deliquescent)	.75
Potassium Hydroxide (Caustic Potash) (deliquescent) .	1.05
Ammonia (Specific Gravity of .808)	.32

PRESERVATIVES: It has been stated that the various reducing ents used in developing solutions are readily oxidized by free oxygen d to prevent this occurrence we add to the solution a substance which s the power of consuming all the free oxygen present. This is readily en in the case of pyro, which oxidizes very rapidly when little or no eservative is present. Negatives developed with pyro under these contions present a heavy brown stain, but by adding sufficient preservative, negative with very little stain can be obtained. The compounds used r preservatives are of the sulphite group of sodium and potassium, ually the former.

Sodium sulphite, the chemical most generally employed, is prepared blowing sulphur-dioxide gas through a solution of carbonate of soda. he resulting solution is cooled and the sulphite crystallized out of it, hese crystals contain seven parts of water of crystallization, and about of the sulphite. When exposed to the air, these crystals effloresce, give off water, forming a white powder on the surface. Also, upon posure to air, sulphite is oxidized into sulphate, which is useless as a reservative. Therefore, sodium sulphite should be kept in well sealed intainers.

By drying the crystals, desiccated sodium sulphite is obtained. This entains about 95% pure sodium sulphite. By precipitating the sodium alphite from hot solutions, a powder which contains about 98% sodium

sulphite, or Anhydrous sodium sulphite is obtained. This is the form that it most commonly used.

RESTRAINERS: There are a number of chemical compounds which have the power of slowing down the action of an alkaline developer, but of all these, only one is in common use. This one is Potassium Bromide. All soluble bromides, chlorides and iodides can act as restrainers, and to a less extent so can some of the alkaline citrates. However, the only two restraining agents which need be mentioned in this text are as follows:

restraining agents which need be mentioned in this text are as follows:
POTASSIUM BROMIDE and POTASSIUM IODIDE: Potassium
Bromide is universally used as a restrainer in developing solutions, while
Potassium Iodide is occasionally used when making prints to reduce
"abrasion Marks" and "fog,"

FIXING AGENTS

THE FIXING AGENT: Although there are numerous chemicals now known which will remove from the developed image the unacted-upon grains of silver bromide, there is but one in common use.

THIOUSLPHATE OF SODA (Hypo): This universal fixing agent can be made by boiling together sodium sulphite and sulphur. Commercially it is made by treating calcium thiosulphate with sodium sulphate. It is obtained commercially in large crystals containing seven parts of water of crystallization. It is usually pure, although sometimes, contaminated with foreign matter, due to careless handling. Hypo is somewhat hygroscopic, and should be stored in a dry place due to this property.

ACID USED IN FIXING BATH: To neutralize the akali carried over into the fixing bath, a fairly large amount of relatively weak acid is necessary, rather than a small amount of strong acid. The amount of alkali which an acid can neutralize depends upon the total amount of hydrogen present, and not upon the disassociated portions only. The acids strongest in acidity are the so-called "mineral" acids such as sulphuric and nitric, while the weakest are the "organic" acids such as citric and acetic. The latter kind, however, have the power of neutralizing large amounts of alkali.

ACETIC ACID is most commonly used in fixing baths. In dilute and impure form, this acid is known as vinegar and is prepared from the fermentation of apple juice, grain, etc. The strongest form of acetic acid is known as GLACIAL acetic acid, which is 99% pure. Glacial acetic acid may be diluted with distilled water to make acetic acid of any required strength such as 28%, which is called for in nearly all photographic formulas using this acid. Acetic acid is a colorless liquid with a very pungent and sometimes irritating odor. In concentrated form, it has a decided corrosive action.

As a substitute for acetic acid, some fixing formulas call for the use of SODIUM BISULPHITE, which supplies the necessary acidity, although it does not furnish the reserve of neutralizing power that acetic acid does.

CHEMICALS USED IN HARDENING: In order to prevent undue swelling and softening of the gelatine emulsion in subsequent washing, certain chemicals are added to the fixing bath or are used at other times in the various photographic processes. These chemicals which have a tanning or hardening action upon gelatine, are mainly certain alums, there being only one other chemical (Formalin).

ALUM is a compound of sodium potassium or ammonium with aluminum. If the hydrogen of sulphuric acid is replaced by aluminum, we get aluminum sulphate. This, in combination with the substances mentioned above, i. e., sulphates of sodium, potassium or ammonium, forms the compound used in photography.

POTASSIUM ALUM is most commonly used as the hardening agent in acid hardening fixing baths. It is obtained commercially in the form of clear crystals or a white powder. These forms are quite stable. The powder form, however, is somewhat subject to lumping upon exposure to the air.

POTASSIUM CHROME ALUM is a compound of sulphate of potassium and chromium. Potassium Chrome Alum is often used in place of the ordinary potassium alum. It is obtained commercially in a very pure state in the form of violet crystals, which are red by transmitted light. These, when dissolved in water, form a violet solution, which upon heating, changes to a green due to a chemical change which is injurious (38)

to its hardening powers. Potassium Chrome Alum has a greater hardening power than potassium alum, which is further increased when the solution is made slightly alkaline. This hardener, used for negatives only, is often used in warm weather as a separate or supplementary hardener in addition to its use in the regular fixing bath.

FORMALIN is a solution of formaldehyde in water, the commercial solutions containing about 40% formaldehyde. Formalin has the property of hardening gelatine more than any other hardener and for this purpose is used in weak solutions—not over 5%. In less than a minute such a solution will render gelatine completely insoluble in boiling water. Formalin must be used in a neutral or alkaline solution, as in the acid state it loses its hardening power. Care must be taken to prevent overhardening when using this chemical as it is possible to carry the hardening to a point where the gelatine film will become brittle and crack. Formalin gives off a strong and unpleasant odor, very irritating to the mucous membrane.









"MR. SMITH GOES TO WASHINGTON"

Behind the provocative theme of Frank Capra's latest production for Columbia, "Mr. Smith Goes to Washington," lies an equally exciting story of technical and research achievement in

recreating authentically and efficiently for production purposes the famed settings of the nation's law-makers. These shots are from the studio still collection for exploitation purposes photo-













pictures by irving lippman

The by Irving Lippman, stillman member of Local 659, ASE. Columbia technicians are said to have done an unusudifine job in combining skillfully made miniatures with set

action, as can be noted in Top Left on Page 15. Note the realism of the settings and action. Stillman Lippman's shots might well have been photographs of the real thing in Washington.

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VISUAL SYSTEM

Handy reference series on spectral characteristics of new films lined up.

By JOHN WEILER

Professional cameraman in the Hollywood studios know that there is crying need for a continuous stream of practical data on the many new and superior emulsions that have been introduced with such success by our representative manufacturers in the past year or more. We in Local 659 certainly appreciate the hard work and valuable information supplied by the Hollywood technical representatives of the film manufacturing companies We can go to Emery Huse of Eastman, Wilson Leahy of Agfa, Hollis Moyse of Du-Pont. Jack Guerin of Gaevert and their able cohorts and get a lot of fine data and advice However, much of this material-in the form of charts and graphsrequires considerable study and in the rush of production this is frequently impractical when a particular point of information is needed right on the spot

I realize that the general scope of such information could cover a huge library, but one particular subject that is of immediate and practical interest to all professional cameramen in the studios is the need for a visual—as opposed to the graph system—method for determining spectral characteristics of the various emulsions, under both daylight and Mazda conditions of lighting, and running the gamus of the filters that we cameramen regularly use on the set.

Any project of this kind also should be coordinated with handy information on emulsion speeds, gamma characteristics and other important technical data on each individual emulsion. And this material must be presented in such a practical and handy format that it can be used with speed and accuracy during actual production.

A suggested solution of this situation is the publication in International Photographer of a series of visual comparisons between the natural spectrum as it is rendered in black-and-white by various emulsions plus the correction caused by each individual filter used with each particular emulsion.

Such a series now is in preparation and I expect to introduce the first batch in the September issue. I have discussed the idea with a number of our brother members and have received good advice and suggestions. However, before commencing publication, I believe that best results will be obtained by calling upon the cooperation of the entire membership of Local 659 and other interested technicians to make suggestions as to how they would like to see this series handled.

I hope you fellows will communicate

with me care of the International Pho Tographer at its new address, 6461 Sun set Boulevard. and that you will display some interest, critical or otherwise, in helping to get this series under way. We already are assured of fullest cooperation by the film manufacturers and other companies catering to studio technicians, mos of whom are regular advertisers in International Photographer.

STILL SALON

New quarters of Local 659 and International Photographer provide facilities for rotating still displays.

International Photographer has been presenting regularly pictorial layouts by the outstanding still photographers of the motion picture industry, all members of Local 659, IATSE. This month we present the work of Irving Lippman (Page 10-11) and George Hurrell (Pages 14-15 and are pleased to announce that the new quarters of Local 659 and the magazinat 6461 Sunset Boulevard have provided facilities for the setting up of a rotating salon of original prints of such outstanding shots by studio stillmen.

Plans now are being worked out by the magazine committee of the executive board for the salon. Highlight shots of our studio stillmen during each month will be displayed at the new headquarters and will be published in International Photographer.

The magazine committee, Leon Sham roy, chairman, Bob Coburn and Clifton Maupin, call the attention of stillmen members to the salon plan in the following statement:

"We would like to call the attention of all still photographer members of Loca 659 to the contemplated monthly salor of outstanding prints, and to call upon them for suggestions as to the most convenient method of handling this project Your cooperation will insure its success Please drop a note to the committee it care of International Photographer of telephone Hillside 9189 with your comments and ideas."

Featured in the layout by George Hur rell on Pages 14-15 are: A) Bette Davis B) John Garfield; C) Brenda Marshall. D) Jane Wyman; E) George Brent; F) Geraldine Fitzgerald: G) Pat O'Brien H) James Cagney.

Correction

● An error in the street address of Fred Hoefner's new machine shop was inadvertently published in last month's INTERNATIONAL PHOTOGRAPHER on Page 23, Column 2. Hoefner, long knowt to studio workers for his precision machine work is located at 915 North La Cienega, and not at 915 North Cahuenga.

PROVED DEPENDABLE

THE proving period for Eastman's new negative films has been left far behind. With their special emulsion qualities reinforced by typical Kodak dependability, Plus-X, Super-XX, and Background-X are firmly established as successors to other notable Eastman films for the motion picture industry. Eastman Kodak Company, Rochester, N. Y. (J. E. Brulatour, Inc., Distributors, Fort Lee, Chicago, Hollywood.)

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BACKGROUND-X

for backgrounds and general exterior work



These striking shots by George Hurrell from his recent collection of poses of Warners' stars and feature players

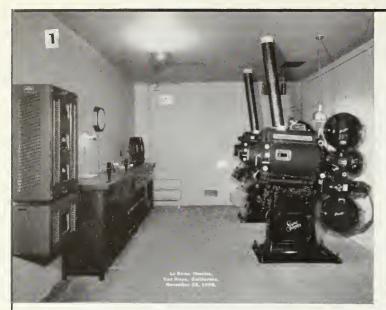






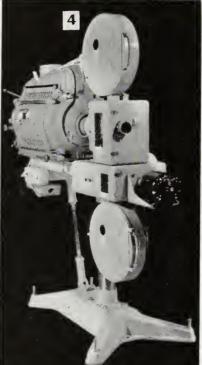


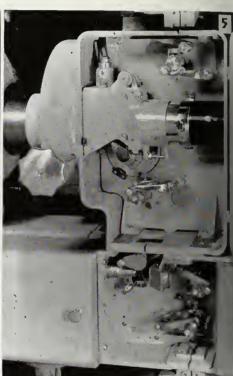
lustrate comparisons between the familiar Hurrell tech- nique and variations thereon. See story on preceding page. STERNATIONAL PHOTOGRAPHER for August, 1939











NOTES ON PROJECTION

Congratulations to Roddan, Comyns and Boyd; first dope on new Holmes Imperial projector; Simplex installations at two Southern California honses; *Projection Symposium* to be carried on with new series on Simplex equipment lineup.

By PAUL CRAMER

OUR PROJECTION notes this month get under way with a batch of congratulatory remarks:

First, to Hal Roddan, who in one month was elected business agent of Studio Projectionists Local 165, IATSE, and tied the marital knots with a charming lady;

Second, to one of the finest men in the industry and one of the projectionist's best friends, our own Bill Comyns, who has just signed up with Walt Disney. We wish Bill all the luck in the world on the new assignment and should add a

bit of congratulations to Walt for having such capable men as Comyns, Bill Gereghty and Sam Slyfield handling his technical problems;

Third, to Jim Boyd, of Local 150, IATSE, who has taken over the distribution as factory representative of the Holmes projector in the Southern California sector and certainly is going to town with it. It is a fine piece of equipment to handle and well worth investigation by studio and theatre projectionists.

On this page are shots of the first Pacific Coast

showings of the new Holmes Imperial:

4) The new model, which features a Holmesbuilt Western Electric Sound head.

5) Interior view of Holmes projector head. Aside from the severe simplicity and sturdiness evident, all bearings are grease packed ball bearings, and will need absolutely no attention during the normal life of the projector. No oil cans to bother with and get oil on the film. The intermittent is gearless and is packed in grease and needs attention only every 90 days. It can be removed and another one inserted in its place in 15 minutes actual time. Entire projector can be taken apart and put back together again in 30 minutes with a screw driver as the only tool needed. Com

ete specifications for this new projector will pear in the next issue of the International hotographer.

During the past seven months we have been ring you brother projectionists a general oute in our Projection Symposium of the RCA and system as in use at the present time, and ded the run up with an informal party and ow by the RCA Mfg. Co. at their plant on orth Sycamore in Hollywood under the supersion of Messrs. Urey and Jackson. Approximely 300 brothers attended and up to date we had nothing but the highest of praise for articles and the final party.

It is the intention of this department to connue adding other outstanding sound systems to r list of organizations who desire to cooperate th we projectionists by telling us through this partment, all about the more intricate details of eir system so that we in turn may deliver the most in service to the men who employ us, us making our positions more stable and a neral improvement in sound to the paying pubthe ultimate consumer.

Several months ago we covered the first major stallation of the new Simplex four star sound uipment at the Alexander Theatre in Glendale, I down we bring you pictures of some of the naller systems. First is of the Fox La Reina in rerman Oaks, on Ventura Blvd., near the interction of Van Nuys Blvd., presided over by Guy oods, a member of Local 150, IATSE, and the cond is of the State in Pasadena, one of the eatres that all brothers of Local 150 are well quainted with, now handled by Clee Horner, other good member of Local 150. Illustrations are:

1) The La Reina Theatre projection room, towing the Simplex sound installation. This is Model B system of 30 watts power, very efficiently covering the 900-seat house with plenty of ower to spare. The neatness of the installation annot be denied.

2) The State Theatre in Pasadena, Calif., which scently rebuilt after a very disastrous fire a year go. This is a Model A installation of 15 watts f power, covering a house of 765 seats. Notice ow the main power amplifier is recessed into the all, yet with adequate ventilation.

3) A view of the volume control amplifier, howing it closed normally and open for accessiility.

In order to go through this series of articles think it will be a good idea if we have you neet the men behind this system in Los Angeles. irst, I would like to have you meet Fowler orst, western representative of the International Projector Corp. Durst has a long and enviable ecord in the building of the present Simplex ystem. He comes well recommended by the riend of all IA projectionists, Herb Griffin, and a case you really don't know, Griffin is the genral poo-bah of International Projector Corp., as vell as one of the finest technicians on matters ertaining to projecting a moving picture on a creen for the pleasure of the public in these Jnited States. You also should meet Manager DeStefano of the National Theatre Supply Co. on South Vermont, also the western sales representaive of this Simplex Sound System, who is at all imes glad to meet any projectionist in the South ern California district and assist him with his problems, be they sound or projector.

The first units to be taken up are the SH 100 Soundheads and the AM-101 Volume Control Amblifier and the co-axial cable connecting the sound leads to the volume control amplifier. Above all hings to be considered in the Simplex System is the extreme simplicity of all parts. For intance, in the sound head there are no vacuum ubes or transformers to get oil soaked or vibrate cose. The optical system including the PEC is ocated on the left hand side, while all sprockets and rollers are located on the right, leaving a ree hand for threading. The PEC is mounted ertically to eliminate vibration of the cathode and the exciter lamp is of the pre-focus type; but



even so, there are thumb screws for adjustments, should it ever become necessary for corrections. All the optical system is resiliently mounted and the entire unit can be removed in case of trouble.

A notable improvement over the previous optical systems is the plano-convex lens-mirror, mounted adjacent to the scanning drum. This mirror is so located and guarded that it is almost impossible to get grease, oil, or finger prints on it, yet it can be taken out and cleaned with ease. You brothers that are in the same boat I am in with the Universal base ERPI system, where you have to try to clean the lens of the optical system with a pipe cleaner or a small bit of cotton or gauze held in tweezers, will appreciate this convenience greatly.

Turning to the other side of the sound head we find that with two exceptions the Simplex system is the same as the RCA as far as the projectionist is concerned, the exceptions are: First, the main gear box that operates the scanning drum and connected sprockets is encased in a bath of oil with a visible glass gauge for the projectionist to see the oil level; second, this complete assembly can be removed in case of trouble and another inserted in its place, during the running time of a full reel on the alternate machine.

Regarding the coaxial cable that runs from the PEC to the volume control amplifier, there has been quite a bit of controversy over this short bit of little known and expensive cable. Some say it is there just as a "something different" gag, but according to the brothers who have run these Simplex systems, this coaxial cable does definitely cut down the los of high frequencies, and saves on terminals that vibrate loose, which in itself pays in quality and upkeep.

GRIP SERIES

Universal's array of serviceable units in "Scotty" Harbison's department.

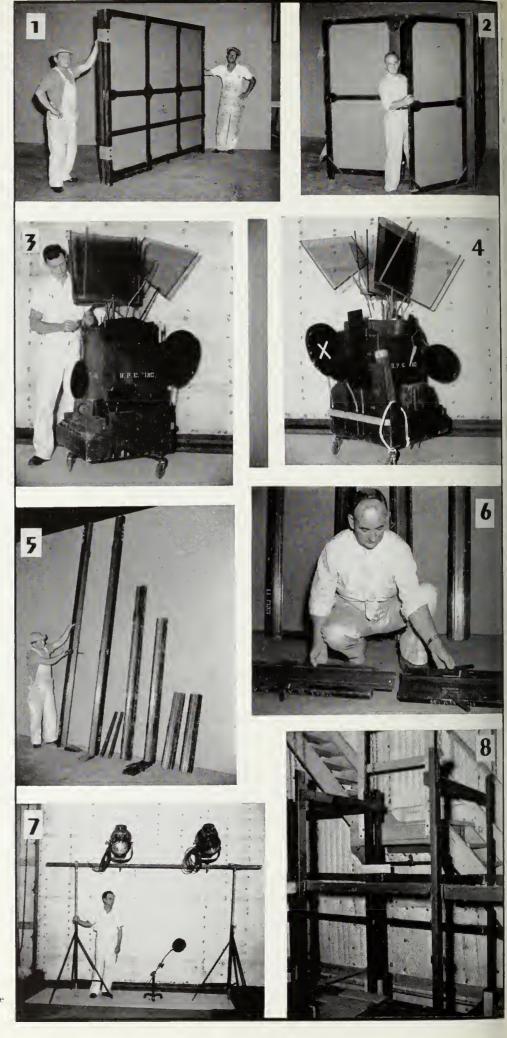
By GEORGE M. HAINES

PICKING UP after a month's absence, our tour of studio backlot departments to publicize special developments in labor-saving and efficient devices brings us to Universal. Over at the Valley studio, the grip department under the supervision of genial George "Scotty" Harbison, head grip, has an interesting array of worthwhile contributions to studio created equipment.

"Scotty" learned in his natiev land the careful methods of the Glasgow shipbuilders and their construction methods are evident in many contributions he has made toward Hollywood studio equipment and set construction. Starting in the silent days with the Paramount organization at the old Lasky lot, present site of NBC radio center, Harbison stayed with that company for some years before transferring his activities to Universal, where he has been for the past 18 years

Illustrated on Page xx are some outstanding items in the Universal grip equipment lineup. They are:

1) Portable dressing room, very compact and easily transported and handled. It is made of brown duck over wood frame, with canvas tie



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International Photographer ANNOUNCES

NEW ADDRESS-6461 Sunset Blvd. **NEW TELEPHONE NUMBER HI-9189**



Over at Universal, Joe Valentine, with the cooperation of General Electric, has developed the new close-up lighting setup illustrated above. Called the Durbinet, because first used for Deanna Durbin, it is four-sided light, with illumination similar to that in jewelry display windows. Great feature is its insurance of even distribution, but without the flat light effect that destroys roundness. Picture by Gordon Head, stillman member of Local 659, IATSE.

flaps and snap-on buttons to hold when folded. Grips in foreground are Harold Tyson and Olivers Hensel.

- 2) Portable dressing room setup, with "Scotty" Harbison in doorway.
- 3) Portable "Christmas tree," easily rolled about on set and featuring readily accessible scrims, flags, discs, doughnuts, furniture blocks and other small items that must be handily and immediately available at all times during production. Best boy Dean Paup is in the picture.
- 4) Another slant on the portable "Christmas Tree."
- 5) Interchangeable duralumin dolly track of different lengths to most conveniently suit usual requirement, with roll-on wedges, two spreaders and simple, quickly handled starter pieces for conections. Harold Tyson is the grip in the picture

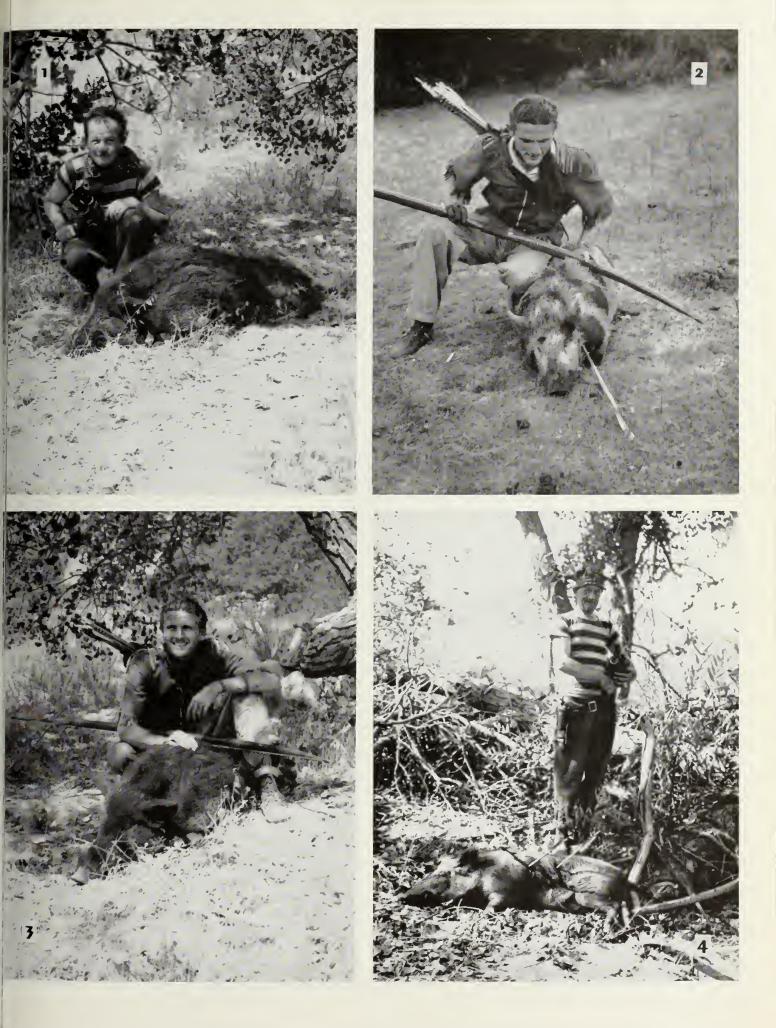
6) "Scotty" demonstrates the smaller track pieces.

7) Overhead set-up for lights. Best use is on location. Board is 2x12x12 inches, with holes ofr lights, held up by two easel stands with pipe to fit and adapted to hold board. This set-up was conceived by Joe Valentine, ace cameraman at Universal. It is known as Valentine set-up. Baby

century stand with spot or disc flag. In the sho is Joe Dickson, best boy, who has been in pictures since 1916, starting with the old Vitagrap studios.

8) Lighting scaffold platform and hangers wit guardrail and safety back scaffold rails. Thes rails are of different lengths to correspond to be length. Note the male pin on each rail to inser in pipe bracket on hanger frame. Stairway i background goes to catwalk above. The safet rail was first used in the motion picture industr by Dave Garber, Universal operations executive probably because he was a pioneer in overhead scaffold lights.

On opposite page are shots from excursion to shoot bow and arrow hunt followers on Catalina Island by Ande Vail, by Mickey Whalen, member of Loca 659, IATSE. Vail has demonstrated his skill for 15 years in vaud and night clubs. Whalen shot 500 feet of exciting action in 35mm. Mickey is seen with victim in (1), while sharpshooter Vail is shown in (2) and (3). Larger boar weighed 315 pounds, smaller 250. Vail had been informed that i would be very difficult to kill the wild pigs this way, but had no trouble using a broad arrow and 60-pound pull on the bow. Whalen got a sensational shot when large boar rushed to within 15 feet of them until stopped by a well aimed arrow. Mickey shows what can happen to a member of Loca 659 when infected with a "Lew Lehr" psychosis in (4).



CLOSE-UPS

HAL MOHR; President of Local 659

HOLLYWOOD TODAY presents a picture of complicated, highly organized motion picture production machines, geared for operations with thousands of contributors to the finished product. It is surprising how few are prominent today in production who started in the happy-go-lucky pioneer

manner. It marks his personality both on the set and off. The idea of Hal Mohr ranting on any subject is as ridiculous as the thought of his photographing a production inexpertly. Two ideas that are mutually self-explanatory.

Mohr has definite ideas on production



days of movie making. One of this small group is Hal Mohr. As a youngster, Mohr was a producer, director, executive, operator of a film laboratory. Today he is one of the industry's top-ranking cameramen, Academy award winner, with screen credits as director as well as cinematographer.

Hal Mohr has been a member of the executive board of Local 659 almost since the inception of the organization, and to-day, as president, he continues to reflect the sincerity, integrity, and sane, sensible viewpoint that has established him as one of the most respected individuals in the photographic fraternity.

Possibly the most distinguishing attribute of Hal Mohr is his quiet, easy-going efficiency along with camera technique. His ideas are reflected in his methods on the set. Consistency of negative quality and smoothness in photographic operations are matched to the tempo and needs of efficient production pacing. In his camera effects he seeks freshness and dramatic emphasis to match the more technical and business-like aspects. A very clear picture of this combination of good business and appreciation for dramatic needs is reflected in a recent detailed account of his experiences in New York production. working with William K. Howard. in the March, 1939. issue of International Photographer.

Hal Mohr is known today as an ace

cinematographer, who likes to jump fron camera to direction, a progressive leader in the affairs of Local 659, and the winner of the Academy Award for the outstanding cinematography of the year in 1935 for "Midsummer Night's Dream," Warner's production. Few know that he directed the activities of producing companies, operated a laboratory for Sol Lesser and wrote, directed and photographed during early picture days.

Leaving Polytechnic High School in hisnative San Francisco to enter the then new movie business, Hal came to the Universal company in 1915 for his first major company assignment a youthful veteran of the rising industry. This experience, from the carefree, disjointed period when scores of independent producers and exchanges competed lustily for nickels and dimes at the box-offices of the nickelodeons up through the development to a stable and important industry, dominated by gigantic corporations and financing in the millions, is the valuable background behind his smooth and consistent performance behind the camera.

In those early days picture-making was more informal, less machine-like. Films were shot off the cuff. There were no complicated, highly organized studio lineups, no sharp demarcations of work and authority. Everybody pitched in. Actors painted sets and painters acted. It was a period of experiment, of trying new ideas, of wondering whether four-reel pictures would be successful, then five, six, seven and eight reelers.

A man who can run the gamut of an industry's rise and development from helter-skelter pioneering to today's giant status must inevitably acquire a huge fund of wisdom and experience, particularly when he has been on the actual firing line of product creation and development from 1913 to 1939. That great wealth of experience is reflected daily in the efficient working of Local 659's president, whether as cinematographer or director.

All of which adds up to the fact that Hal Mohr is a tough bird to interview or to describe. You can't tell the facts without making it look like a puff. The man is efficient, competent, an experienced veteran and probably has more friends and fewer enemies than anyone in Hollywood. You can tell that in 3000 words or 30—it still adds up to Hal Mohr, presiding officer of whom every member of Local 659 is proud.—Gib.

TRADEWINDS

Tephoto viewfinder, focusing alignment gauge, focusing finder, lens attachment and Tru-Pan tripod from Bell & Hwell; Robot Sequence flasher; Leica's new Summitar lens; Kodaguides, Special-Six-16 from Eastman.

L'Telephoto Viewfinder

New two-inch viewfinder objective for use vi available two-inch telephoto lenses is annoteed for use in the Filmo "Aristocrat" Ture Movie Camera. The two-inch lenses with new viewfinder objective permit 8 mm film us to shoot distant scenes, recording images sizen times as large as with the regular half-in lens. The new Finder Objective for the Tret 8 is priced at \$5.50. Two of the most pollar two-inch telephoto lenses for the Filmo Tret 8 are the two-inch F:3.5 Taylor-Holson foising lens at \$54.00. For further description of information write Bell & Howell Company. Reacher the state of the state

2 Turret 8 Focusing Gauge

New Focusing Alignment Gauge announced b Bell & Howell for use with the Filmo Turre 8 permits the operator to focus exactly, as what as to obtain the exact boundaries of the clee-up picture. Since the critical focuser (lich is an integral part of the Filmo Turre 8) and the lens in photographing position at exactly parallel, it is only necessary to slide the focusing gauge block to the right and review the selected lens back into place in order to photograph the picture precisely as focused at framed in the critical focuser. Thus a the card, map or any object may be sharply fused and accurately composed within the film-filme area, and then photographed with complete assurance. Price is \$7.50.

Robot Sequence Flasher

Robot Sequence Flasher, just introduced to American market by Intercontinental Marketic Corporation, New York, adapts Robot's versaty and automatic sequence feature to flash photraphy at night. Sequence Flasher is an entirely rw conception of a synchronized flashgun, mecanically as well as photographically. It consists a base containing a 4.8 volt flat type battery, d automatic mechanism which causes one flash lb after the other to be connected with the ichronizer of the Robot II camera. On top of s base fits an interchangeable bank holding ee flash bulbs and the reflectors. Whole unit connected with the Robot camera by means of electric cable. The Sequence Flasher has stanrd American tripod bushings permitting it to attached to a tripod or to be connected with camera by means of a bracket. The device is in. high and weighs 22 oz.

Every time release button of camera is decessed, an exposure is made and simultaneously e of the flash bulbs flashes. After three bulbs we been fired it is necessary to reload the sher. For quicker working, reloading of the lbs may be avoided by purchasing additional nks and keeping same loaded. After firing the lbs of one bank it is merely necessary to exange the banks without touching the bulbs in der to obtain additional shots with no more loss time than a few seconds. It is also possible connect several flashers to obtain more than ree sequence shots at night time. Button in the se of the flasher permits instant change of conctions to fire three bulbs simultaneously when gher light intensity is required. Collapsible

Our New Quarters

This month International Photographer is installed in new and more convenient quarters at 6461 Sunset Boulevard, and we sincerely invite all studio technicians, executives, department heads, manufacturers' representatives and other advertisers and friend of International Photographer to drop in and pay us a visit. Located at Sunset Boulevard and Wilcox, in the heart of Hollywood, our new offices are within easy reach of most of the studios and also of the "equipment row" on Santa Monica Boulevard. Arrangements are now being made to utilize some of the much greater space available in our new headquarters for display of new equipment, for handy inspection by studio technicians who visit the offices of Local 659 and also of Laboratory Technicians Local 683, which is in the same building.

cardboard reflectors are available for the flasher. They are most efficient and fold up flat.

Construction of the Robot rotary focal plane shutter which is located directly behind the lens permits perfect synchronization and excellent pictures. A shutter speed of 1/50 or 1/100 sec, will give excellent negatives and will permit use of smaller lens openings.

4) Filmo Direct Focusing Finder

● Slipped into the Filmo 141 motion picture camera in place of the film magazine a new unit, announced by Bell & Howell, permits both precise visual focusing and accurate framing of any subject, near or far, through any photographic lens. Image on the ground glass is upright, and is magnified ten times so that no adjustment in magnifying power is needed for critical work. New finder is particularly valuable for close-ups, small objects, titles, maps and animated cartoons when using the Filmo 141 magazine loading camera. Since the 141 Camera may be reloaded while it is firmly mounted on a tripod, it follows that the focusing finder also may be used without removing the camera from the tripod head.

5) B&H Lens Attachment

● The wide-angle lens has been the accessory most demanded for 8mm Filmo cameras and in response to this demand Bell & Howell now announce the Hyper Cinor Lens Attachment which serves two valuable purposes. It doubles the lens angle, so that the area photographed is twice as wide and twice as high as that of the lens used without it. Also, it includes provision for focusing. When normal use of the lens is desired the attachment is unscrewed and removed with a few quick turns. The Hyper Cinor Lens Attachment is supplied in models for the Taylor-Hobson ½-inch F2.5 lens used on Filmo 8's, and for the T-H l-inch F2.7 and B&H Lumax l-inch lenses for 16mm Filmos. For prices and further information

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address Bell & Howell Company, 1801 Lar mont Avenue, Chicago, Illinois.

6) Tru-Pan Tripod

New Tru-Pan Tripod from Bell & Howell designed especially for 8mm movie makers provide the all-around utility of the more cos all-metal tripods. Smoothly operating pan-andhead is similar to that employed on the Beli Howell All-Metal Tripod. Cost-saving is in two-section, selected hard wood legs which strong and rigid, and may be adjusted to ma different lengths. Both pan and tilt may be op ated or locked independently. While announce as having been designed particularly for 8r camera use, it is said to be strong enough for a with any Filmo 16mm camera. Price is \$18.75.

7) Solar Enlargers

 Available from Burke & James of Chica are some interesting leaflets on the new modin the Solar enlarger line, and tips on enlargi miniature negatives. The 4x5—5x7 studio ty model is illustrated, along with a new w. bracket type mounting for this model.

8) Leica Summitar Lens

 Embodying improved definition over entifield of the image, higher degree of chroma correction throughout visible spectrum, and i creased marginal illumination of image, new Le Anastigmat Summitar 50mm, F.2 Leica came lens has just been announced. External appearance of the control of th ance of the lens is not unlike that of the lor popular Summar 50mm lens, except that diamet of front element is much greater. Increased si of front element transmits an increased amount light which considerably reduces falling off illumination at edge of field. This is of great a vantage, particularly in color photography, whe limited latitude of the process tends to exagge ate vignetting. In the past, increasing margin intensity of illumination by increasing size the front element has usually been accomplished at expense of definition. But in the Summitar, tl Leitz Works have succeeded in increasing the definition over the entire area, especially at fu aperture.

A new type optical glass is used for the from element which protects the lens surface very effectively against adverse climatic conditions suc as are encountered in the tropics or in humid a mospheres. Chromatic correction of the Summite lens has been increased over the entire visible spectrum. Lens is collapsible and equipped with standard type focusing mount with depth of focu scale and coupling for the range finder of th Leica camera. When stopped down to f:6.3 th lens may be used for enlarging, while for shor distance and close-up photography, it may b employed with the optical short distance focusin device for the Leica. A special collapsible sun shade is available for the Summitar lens, as ar the Leitz filters. These latter are furnished in screw-in mounts.

List price of the Summitar, in collapsible focus ing mount for the Leica camera, is \$114. Com plete information on this new lens may be had by writing to E. Leitz, Inc., 730 Fifth Avenue, New York, N. Y.

"Film Index" Due

• Work on "Film Index," the 800-page biblio graphy of motion picture literature in preparation by the Federal Writers' Project of New York City has advanced to the final production stages, with the editing of galley proofs under way for early publication. The volume will be distributed by the H. W. Wilson Company, which shares publication sponsorship with the Museum of Modern Art Film Library. It includes classified and annotated guides to some 10,000 books and maga-





zine articles dealing with the creative and technical aspects of film making. It will also offer references to selected reviews of some 4,000 important films classified according to type. The book will sell for ten dollars a copy.

New Kodaguides

• Of interest both to movie-makers and users of still cameras is a new Kodak Home Lighting Guide, for Super-XX Film. This device, a pocket card guide with movable dial, offers complete data for indoor shooting by ordinary room light from 60 watts to 400. It covers light-to-subject distances of 12 feet down to 2 feet; lens aper tures f/2 to f/22; "still" exposures of 1/50 second to 64 seconds; and both normal and halfstrd for movie cameras. Exposure data for all Ci-Kodak Films, 8mm and 16mm, black-andwe and Kodachrome, are provided in a new Ca-Kodak Outdoor Guide just announced. One di adjustment yields a simultaneous exposure reling for all the films, and for light, average ar dark subjects with Kodachrome. Four daylit conditions (from "bright sun" to "cloudy di") and four angles of lighting (back, side, fir front, and open shade) are covered. Both Klaguides retail at 10 cents.

Kdak Special Six-16

Kodak Special Six-16 is available this month ecipped with Kodak Anastigmat Special f/4.5 les in the new, precision-built Kodak Supermic Shutter. Introduced a few months ago, the Supermatic has until now been available only othe Kodak Special Six-20. This new shutter h, in addition to a gear train self-timer, speeds o.T. B., 1 second, 1/2, 1/5, 1/10, 1/25, 1/50, 100, 1/200, and 1/400. The speed range in which the camera may be hand held has figures in black. The "Time," "Bulb," and slower measured speeds requiring the use of a tripod, are inicated in red. Equipped with Kodak Anastinat Special f/4.5 and Supermatic shutter, the klak Special Six-16 will retail at \$43 without ce; \$45.75 with case.

Imge Finder Brackets

Two new encircling brackets for the Kalart Ndel "F" Lens-Coupled Range Finder, designed Speed Graphic cameras only, are announced the Kalart Company. New brackets protect r ge finder from hard knocks while eye-tube extision aids photographer to locate the "bright t" when focusing. Cross slide on upper part o bracket is same size as slide provided on 2ss, Leica and many other cameras for accomndating standard camera accessories. rind holes are provided for fastening slides of fin guns requiring this type of connection. A sted hole provides access to the side-image adjuing disc on the Range Finder. The bracket the 3½x4½ and 4x5 Speed Graphic cameras i equipped with a threaded amber filter to incase the contrast between the direct and refited images. For the Miniature 21/4 x 31/4 Speed Caphic a snap-on filter is furnished for attachi directly to the upper front window of the rige finder.

PATENTS

By ROBERT W. FULWIDER

IST MONTH the following patents of interest to ders of INTERNATIONAL PHOTOGRAPHER were jued by the U.S. Patent Office. These selecins and brief descriptions of new patents were pared by Robert W. Fulwider, well-known is Angeles attorney, specializing in patent and de mark counsel.

2,161,126—APPARATUS FOR PHOTOGRAPHY AND PROJECTION. Harold H. Bigley, Chatham, N. J., assignor of 25% to James N. Catlow, N. Y. Application Sept. 16, 1935. 4 claims.

optical arrangement for motion picture equipnt in which a beam of light is split into two ams of light, each of these beams split into a rizontal and vertical beam, and then passed ough filters to the film.

2,161.735—Color Photography. D. K. Allison, Beverly Hills, Calif., assignor to Detra-

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color, Ltd. Application April 15, 1935.

A color film having three emulsion layers re sponsive to different portions of the spectrum an containing corresponding leuco dyes.

No. 2,162,016—Photographic Film Treating Apparatus. Albert S. Howell, assignor to Be & Howell Co. Application Feb. 21, 193

A film treating apparatus in which the treating solution is carried in pipes supporting the roller over which the film passes, and the pipes have lateral perforated branches between the two se

No. 2,162,324—HEAT RADIATOR FOR PROJECTIO MACHINES. George H. Worrall, assignor | Mitchell Camera Corp. Application Nov. 1937. 6 claims.

A heat absorber and radiator for projectors, cor sisting of a collar with projecting fins aroun the light beam, and acting as a shield to sto

Reissue No. 21,121—TALKING MOTION PICTUR Apparatus. Alwyn D. Lassiter, assignor t Western Electric Co. Original No. 2,104,42 dated Jan. 4. 1938. 22 claims.

A sound apparatus for fading one sound trac in while fading another sound track out.

No. 2,163,029.—Method of Processing Motio Picture Film. *Fred W. Gage*, Beverly Hill Caif., assignor to Warner Bros. Pictures, In-Application Dec. 1, 1937. 2 claims.

A method of processing a film in which frame subjected to various processing are compared b projection to a properly balanced print, an other prints are made by the process producin most nearly similar results to the properly ba anced print.

No. 2,163,325—Color Photography or Cin MATOGRAPHY. Edgar Sanders—Dolgoruki. Lor don, assignor to Truecolor Film, Limited, Lor don, England. Application Oct. 28, 1937. 1 containing color-formers by developing in a de Great Britain October 29, 1936. 5 claims.

A method of developing a multilayer color filr veloper not affecting the color-formers, fixing converting the silver images to silver salts, an redeveloping with a color-forming developer. No. 2,163,470—Feed and Guide Roller fo

CINEMATOGRAPH APPARATUS, Wermer Scupin Silesia, Germany. Application Nov. 23, 1937. In Germany May 31, 1935. 1 claim. A film roller for motion picture equipment

which consists of a resitient annular shaped rolle

with rigid side plates of a smaller diameter.

No. 2,163,530—Color Motion Picture System

Romeo Fritz Thieme, Leipzig, Germany. Ap

plication March 27, 1936. In Germany Apri

3, 1935. 5 claims.
A method of producing color motion picture by means of a light polarizer adjustable to ro tate different wave lengths of polarized light.
No. 2,164,062—Diffraction Method of and

APPARATUS FOR COLOR PHOTOGRAPHY, Samue B. Grimson, New York, assignor to Color Re search Corp., New York. Application Nov 26, 1937. 3 claims.

A method of making black and white separa tion negatives from a color scene by using three-color filter and diffraction grating.

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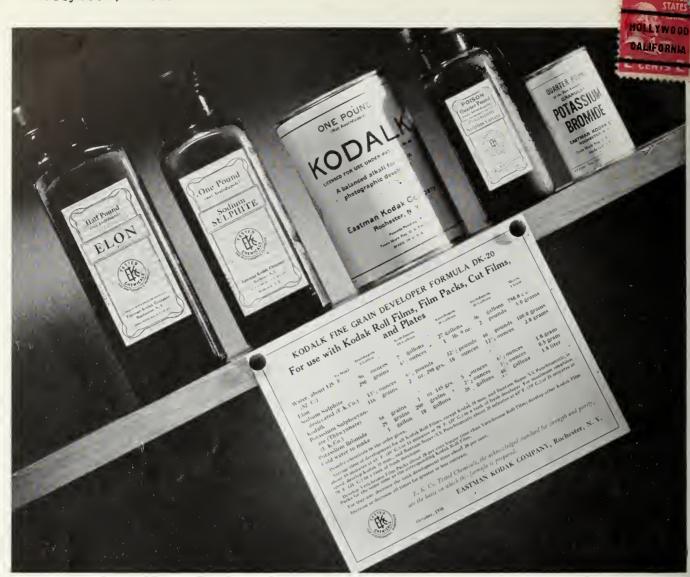
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Vol. 11

September, 1939

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On the Cover

Mr. and Mrs. Robert Taylor (Barbara Stanwyck) at home. Photographed on their San Fernando Valley ranch by Durward Graybill, stillman member of Local 659, IATSE, and staff photographer at MGM.

Editor, ED GIBBONS; Managing Editor, HERBERT ALLER; Art Editor, JOHN CORYDON HILL; Business Manager, HELEN BOYCE.

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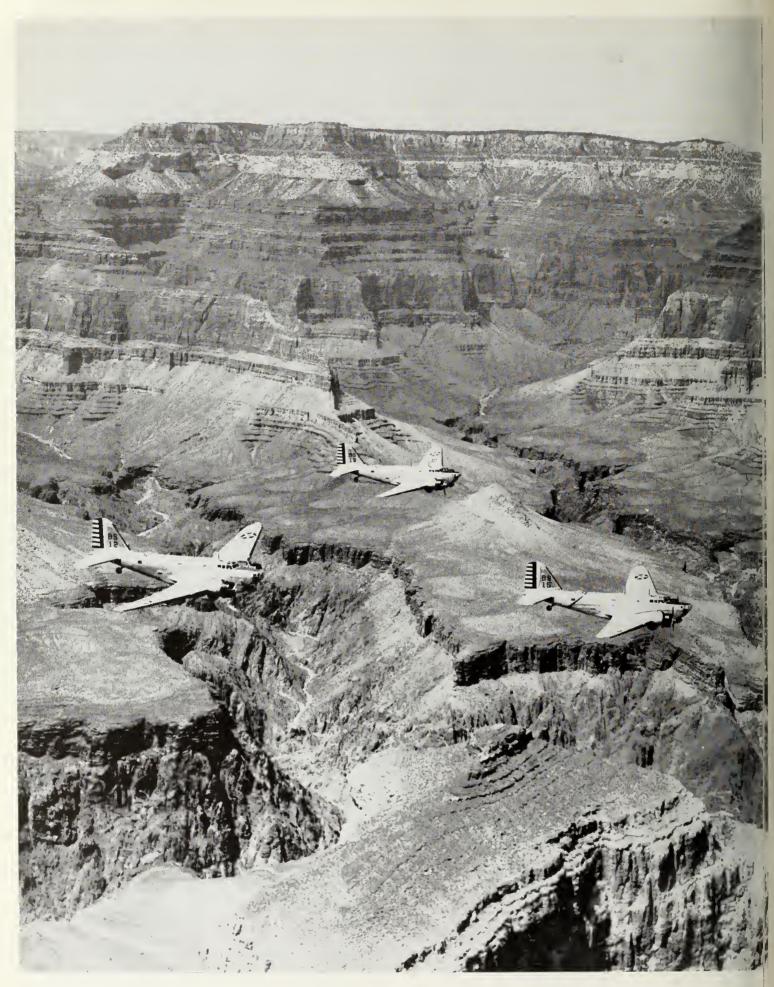
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Pictures on this and opposite page are from Universal Newsreel clips of latest type U. S. Army bombers in action. Above is a flig

Sutemational HOTOGRAPHER

Only International Professional Journal of Motion Picture Arts & Crafts

vive la vincennes

ith Europe engaged in another war that bids to outdo the last World War in spectacular use of the camera record cruel events for history and to fit into military strategy in many ways, this article is very timely.

By NORMAN ALLEY

NOTHER BIG WAR in Europe! Everywhere America, the Man on the Street stares glaring newspaper headlines, and asks the man next to him: "Do you thinke'll get in it?"

They go their separate ways and home dinner; drink a second cup of coffee sently, as the wife turns on the radio.

This is John Blank, Berlin corresondent for Dilapidated Press—speaking you from the galvanized press coop on ilhelmstrasse Unter den Linden. Adolph itler, self-styled first soldier of the Reich,

announced this morning that . . . "

The wife leaves the dishes stacked high in the sink; they both go to a movie. The newsreel comes on. A clip is shown of Nazi troops pounding on Warsaw . . . It changes to French blue devils taking up their positions in the Maginot line . . . Then comes a spectacular shot of an air raid over London, as children with tags on their lapels are led in a mad exodus for the country. . . .

"How do they get those pictures?" the wife wants to know.

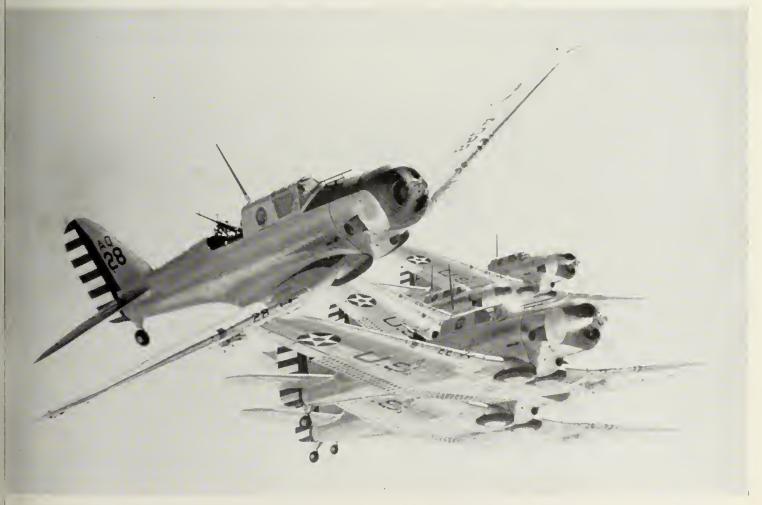
"They take them!" growls the husband. "With a camera!"

"I know that, dear," she says, defensively. "But do they go right up there in the front lines? Seems to me it would be dangerous."

"Yeah, but it's fun. Wish I was a cameraman. Just take pictures, while the other suckers fight; sleep in water up to their necks, and drag cannons around!"

"Doesn't the cameraman have to put up with any of the front line hardships?"

"Naah!" says the husband. "Do you



rmation, photographed below the top of Crand Canyon. On next page, lead plane is "peeling off" as attack signal.

Unusual Delay

The editors of International Photographer regret that problems incident to the National Labor Relations Board election amongst studio technicians has caused a delay in the publication of this month's issue of the magazine. The great majority of contributions to International Photographer are from members of the International Alliance, and special meetings and other urgent activities during the past month seriously disrupted the routine schedule of publication.

know how they always get those swell close-ups of the general?"

"No, but I've often wondered. How?" "They live at the general's house!"

"Well, how do they get that front line

"They have a telephone running from the front line to the general's chateau. If anything good comes up, the boys in the front line call the general's house, get the cameraman on the phone, and tell him to come on over at his earliest convenience. Then a truce is declared, and the cameraman comes in under a flag that says 'Newsreel' on it. Both sides, being full of guys who like to have their pictures taken, cheer -and after the cameraman doffs his hat and takes a bow, even to blowing a kiss to the dear enemy, he settles down in a steam-heated shell hole and gets focused up-even to running a tape measure, for instance, from the Maginot Line to the Siegfried sector. Once he gives the signal that he's all set and loaded up, a whistle blows-unless he's making a sound picture, in which event they'd shoot off a whispering flare—and the two sides start acting all over the place. If the picture doesn't look good, the cameraman bawls out both sides; threatens to quit, and then has them do it all over again. When he's through, hostilities are suspended once more while the cameraman gets into the side car of a motorcycle piloted by a shell-

"How do you know all this, dear?" asks the wife, who's still as gulible as the day she married him.

shocked stunt man, and heads for a hidden

airfield - where he has the boys do a

couple of spectacular crashes for him, set-

ting fire to some of the ships to show big-

ger production!

"Oh, I was going to be a cameraman in the World War myself—but the day before I was to set sail for France, I was a victim of sabotage!"

'Sabotage?" . . . She thinks it's the name of someone.

"Yes, dear, sabotage. Pure and simple. I tripped over a tripod and broke my leg in two places.'

"You should have stayed away from

those places!" reprimands the wife.

He passes that one over, as he adds: "When I woke up I was marching with the infantry.

"But, darling," she says, putting her foot right into it, "you told me you got those scars when you fell off a box, while reading a gas meter!"

And so it goes. That guy had it all in his own head; the entire set-up in a nutshell, so to speak.

Now that the reader may be interested in hearing the true situation behind newsreel pictures on foreign fighting fronts, suppose I tell you something about it. I'm a newsreel guy of parts, and I operated a camera in the Photographic Division of the A.E.F. during the "first" World War.

Making news clips on the field of battle is no picnic. You hole in beside the rest of the mob-you don't ask for, nor receive any favors or special privileges—and when night falls, just as like as not you'll find yourself lying down in a trench, using a 10-inch thickness of water for a crazy quilt.

Cameramen, on their first war assignment, sometimes get something akin to "buck fever" when they bead their lens on a war horror. It's almost as hard to train a camera on a dving soldier as it is to be the guy who did the dirty work. Your first instinct is to drop all work; run out and help him, to maybe tumble beside him, mortally wounded yourself, in attempting to do so. And you don't get pictures. . . .

A cameraman is a marked man from the opposing trench. If they spot him-killing nobody, but just taking pictures—he is slated for special elimination. They know the guy is making pictures that—regardless of a professed neutral viewpoint—are going back to grace neutral screens and tell tales to a people who, now knowing the facts, may rise in arms to help the other guy's cause....

Then there is always the chance that some green grenadier on the other side of the fence, who's never been out of the "backwoods" till the military came and took him, will mistake your camera for a machine gun and take advantage of the opportunity for a "purty" decoration—by letting you have a "pineapple" amidships.

Right now, in the early stages of this present conflict, a rigid censorship holds swav-and the news cameramen on the present European scene has to subsist on "hand-outs". Lavenders are given to the headline-hungry newsreel groups at one and the same time by the departments on Public Information maintained by each of the belligerent governments. This tends to make an enterprising newshawk most unhappy, since it nips in the bud any chance for such joyous things as "exclusives"—and he doesn't have to be overly bright to know that the material being handed out has been first fine-tooth-combed, edited by master propagandists, and

Alley Off Again

Just a few days after Norman Alley placed the copy for this interesting yarn in our hands, he left by plane for N. Y. on the first leg of a journey that will speed him and his camera to cover the European War. Alley planned to fly to Lisbon, then on to Bucharest, and work from there. He has secured a leave of absence from his post in charge of Universal News for Southern California to take the war assignment for Hearst Movietone News. At the earliest opportunity he will rush special information on the war situation from the photographer's standpoint, for publication in International Photographer.

most thoroughly adulterated. The celebra ed face on the cutting room floor has not ing on the pace of the censorship boar At the present writing, scoops are only be found in the dictator's private sug barrel; while beats are found nowhere sa

on a mustering drum!

But the headline hunters will gradual seep in, just as sure as water will enter punctured submarine. The bars will down, when—while the herdsman is loc ing the other way - the newsreel gu themselves will take them down. Then w follow a mad stampede of the choice sto in that corral-and we can look for beascoops, and all the things that make for return of halcyon days to the man w takes his life in his hands for a few pr cious news clips. Yessir! Give a veter newsreeler an inch, and he'll photograp a thousand feet!

Of course, in the last war, photograp ing the conflict wasn't all work and play. There was grand and unforgettal moments in Paris and other hot after da spots-but that wasn't the privilege of favored few who had sufficient United (gar Store coupons to pay for the vin rou or champagne. No, indeed. The guy w tripped over a tripod and woke up in t infantry had his moments, too - ev though he never has told his wife about

When the last war came to a close, t surviving members of the Photographic I vision, A.E.F., scattered like chaff to t four winds. I've gone further afield in the ensuing years than most of them, and I) not ashamed to admit I often sit-wi eyes not too dry-and think of that grain army of "Vincennes Invincibles." . . .

Recently, I was "cutting up touche with my old comrade Pete Shamroy-no Ambassador of Good Will for Dupo Films, here in Hollywood. Just for fi and a lot of swell reminiscence, we got o heads together and conjured up a list some of that old overseas gang-and b lieve you me, Pete could put his hands most of them quicker than an able G-ma Here they are, all former movie and "stil cameramen for Uncle Sam in the free-fo all of '17, or fellows with their necessar

oulders to the wheel in the same division. I've already mentioned Pete. Then, let's e. As I clear my throat, I must think Wooster Lambert, still fighting the naon's halitosis with Listerine, at St. Louis. ick Sears, news camera for Universal in ew England; Ernest Shoedsack, now famis for the direction of Hollywood's most nusual features; Mark Bara, an indusial engineer at Providence, R. I.; Larry armour, one of Hollywood's best dollarretching producers; Victor Fleming, a g director of super-productions for the .G.M. lion to roar about; Al Kaufman, roduction executive; Johnny Swain, labatory contact at RKO; Harry Thorpe, ureau of Identification, L. A. Police ept.; George Teague, Universal process pert; Willard Vanderveer, with Pete mith's novelty shorts, MGM; Len "Bull loose" Smith, camera ace at MGM; Chare Downs, major-domo of N. Y. Cameraen's Local, No. 644, IATSE.

Earl Hines, Harry Davis, Tom Galligan, eggie Lyons, Ed Schneider, cameramen in udio production; George Marshall, ace rector at Universal; Gare Schwartz, exerimenting with the theories of multipleimension in Paris; Jeff Dickson, who also ayed in Paris, and became the Tex Rickrd of Europe; Al Mann, director for aramount; Wesley Ruggles, one of the ery tops among movie "megaphoners"; hubby Lehmann, newslensing for Moviene in Southern California; Charlie Ford, roducing for Republic; Norman Sper, cking football goals for Liberty Magane; Ira Morgan, production cameraman -as is Gus Peterson; Lewis Milestone, ace

Billy Williams is now a process expert RKO; Jim Brown is photographing for armour; Vic Carlson, traffic dept., So. alif. Telephone Co.; Bill Abousselman, rance's leading radio manufacturer: Bill amilton, film editor, RKO; Hal Mohr, ce cameraman and president of our ocal; Frank Lyddell, famous radio hillilly; L. W. O'Connell, cameraman at arners'; Roland Price, producer-cameraan; Eddie White, associate producer at epublic; Otho Lovering, associate producer with Walter Wanger.

Farciot Edouart, process supervisor at aramount; Charlie Fogel, superintendent exchange prints; Maj. E. J. Hardy, in olitics at Berkeley; J. N. Hillhouse—now Reverend—who runs a desert sanitarium Phoenix; Courtney Munson, Bureau of lentification, Pasadena Police Dept.; A. Waxman, Warner Bros. Publicity; John-Waters, assistant director at MGM; Jack Gagstick" Wagner, Hollywood's famous Igman; Duke Zalibra, photography, L. A. oard of Education; Ed Waskow, furnire; Paul Vogel, camera at MGM; Al etzel, camera; Bernie Loper, theatre anager, Los Angeles; Al Romell, phography, Southern Pacific R.R.; Walter ill, 8mm expert with Gavaert; A. F. oldsborough, Pasadena rifle expert; and



Shots like these, both actual scenes from the last World War, will be the material from which newsreelers and army photographers will make their records of the new conflict. Top scene was shot during action "somewhere in France," while the bottom shot shows the spectacular keeling over of a torpedoed transport.

Felix Shoedsack, brother to Ernest—a production cameraman and gentleman farmer.

There were others, who have "gone west." What a bunch to have in any man's army; peace or war. Some of them are perhaps a little too much around the waistline, etc., today—but if trouble should break out tomorrow, I'd bet dollars to doughnuts that they'd be fighting for a

chance to get right back in there and do the same thing over again. What's more, they'd give an account of themselves that would stack up, and I'd vouchsafe surpass any aggregation of young aspirants that might arise to contest their right to the title of the greatest aggregation of camera talent "ever assembled under one tent!"

Viva La Vincennes!

STUDIO GRIP EQUIPMENT

Instructive presentation of outstanding grip equipment developed at Samuel Goldwyn studios by Alex Hume an his competent aides in grip department; not found at other lots; camera tripod and equipment box of special note

By GEORGE M. HAINES

Local 80. IATSE

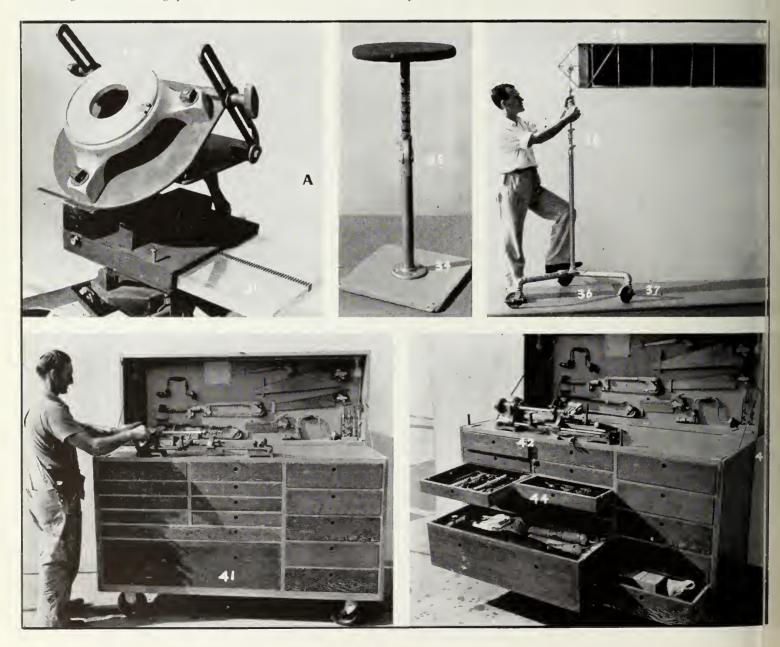
WHEN VIEWING equipment at Samuel Goldwyn Studios one is impressed by efficiency of each piece of equipment in the grip department, which is ably handled by Alex Hume, head of the department. Alex, with many years behind him at the Goldwyn lot, has organized a very smooth running department, in fact, one of the best. Many of the studios could profit by observing some of the methods employed in the Goldwyn grip department, handled by a man whose equipment ideas and understanding of labor contribute much to the well being of his organization.

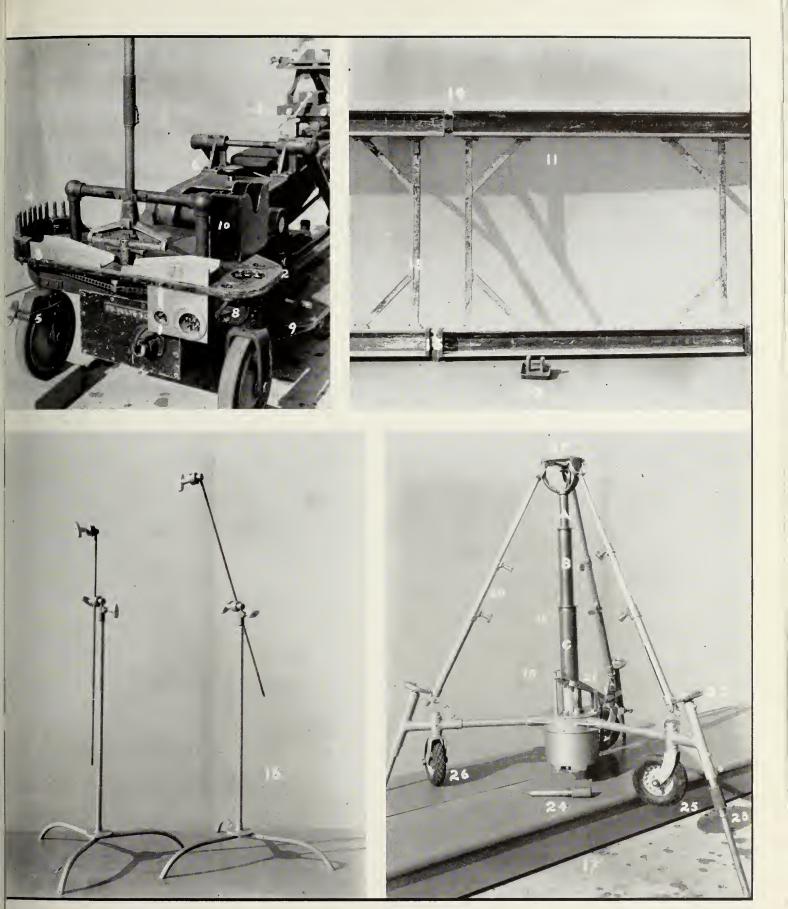
In Ralph Hoag, Hume has an able key grip, as demonstrated by his contributions to the industry, many of which have been adapted by other studios. Pictured here are some of his inventions, including Hoag Hydraulic Tripod; efficient light Jumbo stand; grip box; duralumin adjustable track; extension leg point chuck. Hoag is now working on several ideas which when completed will fill a real need in the industry. He has spent 10 years with Goldwyn and free lanced for five. We hope in future to give our readers additional information on the Goldwyn equipment.

Equipment described is keyed by numerals in acompanying layout of pictures.

- Velocipede sound synchronizing unit.
 Connection for follow focus unit with electrical motors.
 - Duralumin inclines for track.
 - Connecting pins or dowels for dolly track.
 - Foot control velocipede wheel brake.
- 6. Rheostat control for electrical elevation of velocipede camera arm.
 - 7. Off-center camera plate crank.

- Connection for camera arm control unit
- Manual camera arm crank.
- Accessories box.
- Duralumin adjustable dolly track.
- Protection caps for track ends to prote dowel lock holes when not in use.
 - 13. Caps as when track is not in use.
- 14. Connecting dowel lock pins as insert when additional track is used.
- 15. Adjustable track spreaders.
- 16. Bronze century stand—bronze fittings, dogs, with satin finish (a process of rust proc
 - Hoag Hydraulic tripods with satin finish.
- 18. Pressure release valve for decreasi height of camera.
- 19. A.B.C. three extensions for elevati camera.





Pictures on this and opposite page made exclusively for International Photographer by Robert Coburn

- 20. Guy rod dog for tying off when camera is
- et.
 21. Hydraulic foot pump for elevating camera

- ripod.

 22. Tripod tie-off dog.

 23. Extension tripod leg point.

 24. One of two adjustable leg points.

 25. Tripod point is inserted in chuck (similar
- to lathe chuck).

 26. Pneumatic swivel tire.

 27. Camera base plate head.

 A. Adjustable high hat plate.

 30. Tie-off dog and elevation arm for adjusting high adjustment. of its adjustment.

 31. Off-center camera extension plate.
- Removal high hat on adjustable plate.

- 32. Removal high hat on adjustable plate.
 34. Adjustable height camera stool.
 35. Claw dog for various heights.
 36. Jumbo stand with overhead blade. Grip in picture is Jess Wilson, member of Local 80, IATSE.
 37. Wheel locks.

 - 38. Tie-off Jumbo stand elevation dogs.

39. Adjustable blade extension.

40. Sliding blade. Grip in picture is Jess Wilson.

41. Grip equipment box. "Denver" H. R. Brandon, Local 80, IATSE, is grip in picture.

42. Handy lathe with removable mounts,

43. Electrical plug-in sockets.

44. Grip accessories.

A. Adjustable high hat.

Notes on the above equipment.

Items 1 to 10. The placement of the sound synchronization, connecting of follow focus and camera control, incline tracks, dowel pins, accessory box, in the rear is a much improved feature over the usual unhandy placements of such equipment.

Item 5. Foot brake, a durable feature for effi-

ciency in operation.

Item 6. The proper placement of the arm control makes for efficiency and convenience of cam-

eraman or key grip.

Item 7. This is to date most efficient track we have seen. Its advantages over other tracks are: It is constructed of duralumin, permitting easy handling; adjustable spreaders for any width; "I" beam track, eliminating the use of cumber-

some base planks as "I" beam has sufficient strength to eliminate sag; dowel lock pins retaining strength of "I" beam track.

Item 16. As with all Samuel Goldwyn equipment, efficiency is foremost. These stands exemplify this.

Item 17. The Hoag tripod. This is the much talked-about hydraulic tripod that meets every demand of a cameraman. In efficiency it is unsurpassed for the following reasons: Fig. 21 is the hydraulic foot pump for gradual elevation of camera. Fig. 18 is pressure release valve for decreasing height. Figs. 23 and 24, interchangeable extension leg points with chuck connection. Fig. 26, pneumatic tire permitting easy vibrationless mobile movement. Fig. 20, rigid guy rods. Figs. A, B and C, the hydraulic lifts permitting at least four feet more of height than the usual tripod height. In the construction of this tripod the lightest metal has been used wherever possible, treated with satin rust proofing.

Items 30 and A. Adjustable high hat plate and off-center extension plate. A very efficient grouping of equipment for down shots. In the picture it is adjusted to 45 degree angle with base carriage slightly off center on extension plate. The

extension plate is a proven time saver inasmuch as the camera can be moved 18 inches off center each way, eliminating the need for a change in sct-up for such a required small change in angle,

Item 36. Jumbo stand with four satin rustproof height extensions and duralumin frame overhead blade. This dual purpose Jumbo stand can be elevated to 24 feet without any weight necessary at base. When blade is used, its extension is 8 feet. Jumbo stand also is used with flag to gobo off light from parallel. It is equipped with foot adjustment wheel locks.

Items 40 and A. Grip equipment box. The most efficient box seen to date. Such a box should be on every set. Every piece of equipment and grip accessory is conveniently at hand (no digging required). Observe the lights in top, eliminating the bright work light usually required. On the lathe shown was turned out much of the unusual equipment used at Samuel Goldwyn Studio. Pictured with box is "Denver" H. R. Brandon, grip, who has been associated with the industry for 15 years, having spent the last nine years at Samuel Goldwyn Studio. "Denver" has utilized his past experience as a machinist to help turn out many of the Alex Ilume and Ralph Hoag ideas.

mixing weights and measures

Chapter IV from Don Hooper's volume, "Basic Photography," presenting reference-worthy material on basic elements of photography; presents comprehensive data on tables, weights and measures used in profession.

By DON HOOPER

Numerals in parenthesis in the following text refer to the page numbers on which this material appeared in the original edition of "Basic Photography," A few copies still are available. Turn to Page 27 for information."—Ed. Note.

INTRODUCTION

(39)

The preparation of photographic solutions, from the chemicals which have been described in the previous chapter, is no haphazard process, but calls for extreme care in each of the following procedures: first, the purity of the chemicals used and the cleanliness of the containers; second, the proper amount of each chemical being weighed or measured out; and, third, the combination of these chemicals in the proper order and their thorough mixing. There is nothing difficult or mysterious about preparing photographic formulas, but poor results will often be obtained from carelessness in their preparation.

The information supplied in this chapter is of such nature that it is almost impossible to memorize any great portion of it. Its main importance is to act as a ready reference in the preparation of photographic formulas. It should be read in earnest, however, as the general context of the chapter can be remembered and will prevent you from blindly making errors when

preparing to do darkroom work.

WEIGHTS AND MEASURES

Dry chemicals (those in crystal or powder form) are always weighed to obtain the desired amounts, while the various liquid chemicals used, as well as water, are almost always measured by volume. In the United States and Great Britain there are two systems of weights and one of measures used in photographic work. The Units of those systems with which we are concerned are given below:

AVOIRDUPOIS (AV) WEIGHT

27-11/32 Grains (grs.)	am or Drachm (drm)
16 Drams (drms.)	unce (oz.)
16 Ounces (ozs.)	und (lb.)
437½ Grains	ince
7,000 Grains	und

APOTHECARIES (APOTH.) (AP.) WEIGHT

20	Grains1	Scruples (sc.)
3	Scruples (ses.)	Dram or 60 Grains
8	Drams1	Ounce or 480 Grains
19	Ounces 1	Pound or 5.760 Grains

It will be noted from the above tables that considerable difference exists between these two systems of weights. However, the Grain is the same in both, one grain Av. having the same weight as a grain Ap. All United (40)

States formulas, which are the ones generally employed in this country, are the Avoirdupois system, and use only the grain, ounce and pound. However, British formulas frequently call for Drams of a certain chemical, and in using such a formula the Apothecary's dram is meant.

The following table of fluid measure is used almost entirely in this country, for measuring fluid chemicals and water:

	,,		
60	Minims (mins.)	Dram or Drachm	(drm)
8	Drams1	Ounce (oz.) 480	Minims
4	Ounces1	Gill	
4	Gills1	Pint (Pt.) 16 Our	nces
2	Pints1	Quart (Qt. 32 Ou	nces
4	Quarts1	Gallon (gal.) 128	Ounces

The above system is used in Great Britain with the difference that the pint contains 20 ounces and the quart 40 ounces. This should be remembered when using British formulas. One fluid ounce of water weighs one ounce Avoirdupois and as one fluid ounce contains 480 minims and one ounce Av. 437½ grains, a minim of water weighs roughtly 0.91 grain, The units of fluid most commonly used in photography are the minim, dram, ounce, quart and gallon.

THE METRIC SYSTEM

In most European and in many other countries the METRIC SYSTEM of weights and measures is used. This system is much simpler than ours, easily learned and remembered, and has the following advantages over our systems:

1. Decimal relationship of units.

Uniform and self-defined names of units.

Simple relation to each other of units of length, area, volume and weight.

For this reason it is essential that the photographic student become familiar with this system. The unit upon which the entire Metric System is based is called the Meter, which is supposed to be one ten-millionth of the distance, on the earth's surface, from the pole to the equator.

The three BASIC UNITS of the Metric system, however, are as follows: METER, for Length.

GRAM, for Weight of Mass.

LITER, of Capacity.

The tables of this system are made up in multiples of ten. The terms used for the various measurements are the names of the three basic units, and three Greek and three Latin prefixes for each of them, as follows:

Prefixes			
MILLI	One-thousandth	1/1,000	.001
CENT	One-hundredth,	1/100	.01
DECI	One-tenth	1/10	.1
—UNIT	One	1	1.0
DEKA	Ten	10/1	10.0
HECTO	Hundred	100/1	100.0
KILO	Thousand	1000/1	1000.0
433			

The Metric System tables are formed by combining the prefixes with, the terms for the basic units as follows:

		LENGTH		
10	Millimeters (mm)		1	Centimeter (cm)
	Centimeters		1	Decimeter (dm)
10	Decimeters		1	Meter (m)
	Meters		1	Dekameter (dkm)
	Dekameters		1	Hectometer (hm)
	Hectometers		1	Kilometer (km)
10		WEIGHT OR MASS		
10	Milligrams (mg)		1	Centigram (cg)
	Centigrams		1	Decigram (dg)
	Decigrams		1	Gram (g)
	Grams		1	Dekagram (dkg)
10	Dekagrams		1	Hectogram (hg)
	Hectograms		1	Kilogram (kg)
-		CAPACITY		
10	Milliliters (ml)		1	Centiliter (cl)
10	Centiliters		1	Deciliter (dl)
10	Deciliters		1	Liter (1)
	Liters		1	Dekaliter (dkl)
	Dekaliters		1	Hectoliter (hl)
	Hectoliters		1	Kiloliter (kl)

The Square and Cubic tables are made from the squares and cubes of linear units, as cubic centimeter, square meter, etc. To better establish relationship of the various tables, it is well to remember the following: One Cubic Centimeter equals one milliliter and that volume of water eighs one Gram at 4 degrees Centigrade.

One Cubic Decimeter equals one Liter, and that volume of water weighs

he Kilogram, at 4 degrees Centigrade.

EQUIVALENTS AND CONVERSIONS

Since practically all our devices for weights and measurements are for the United States and British systems, it is frequently necessary to convert train weights, lengths and capacities expressed in the Metric System, to not suitable for our use. Various useful equivalents are given below, and the conversions are easily made by using these conversions and rules.

EQUIVALENTS

ENGTH	1 Centimeter 0.3937 Inch
	1 Inch 2.540 Centimeters
	1 Meter 1.094 Yards (3.28 Ft.)
	1 Yard 0.914 Meter
duality	1 Kilometer 0.621 Statute Mile
1	1 Statute Mile 1.61 Kilometers
12)	
APACITY	1 Cubic Centimeter (cc) 0.061 Cubic Inch
	1 Cubic Inch
1	1 Milliliter (ml)
1	1 Liquid Ounce (Av.)
	1 Liter (dm3) 1.057 Quart (Av.)
EIGHT	1 Gram
	1 Grain (Av.)
	1 Gram
	1 Oounce (Av.)
	1 Kilogram 2.205 Pounds (Av.)
and the second	1 Pound (Av.) 0.4536 Kilograms
	RULES FOR CONVERSION

	1 Gram 0.0555 Ounces (A	v.,)
	1 Oounce (Av.)28.35 Grams	
	1 Kilogram	v.)
	1 Pound (Av.) 0.4536 Kilograms	
	RULES FOR CONVERSION	
ENGTH	Inches to CentimetersMultiply by	2.54
	Centimeter to InchesDivide by	2.54
1	Yards to MetersMultiply by	
1	Meters to YardsDivide by	.914
OLUME	Fluid Ounces (Av.) to Cubic Centi-	
	meters (or Milliliters)Multiply by	29.6
ļ.	Cubic Centimeters (or Milliliters) to	
	Fluid Ounces (Av.)Divide by	
}	Quarts (Av.) to LitersDivide by	1.057
	Liters to Quarts (Av.)Multiply by	1.057
EIGHT	Grains (Av.) to GramsDivide by	15.43
1	Grams to Grains (Av.)	15.43
	Ounces (Av.) to GramsMultiply by	28.4
1	Grams to Ounces (Av.)Divide by	
	Pounds (Av.) to KilogramsDivide by	
	Kilograms to Pounds (Av.) Multiply by	2.205
li .		

MEASURING LIQUIDS

Liquids are usually measured in glass graduates, although they may be casionally measured by weight. These glass graduates are of various zes, the most common assortment in use being the one dram (sixty inims), one ounce, eight ounce, and thirty-two ounce sizes. When measing liquids, especially acids, great care should be exercised in pouring om the bottle. First remove the stopper and lay it on something that will be injured by the liquid, or hold it between the fingers. Holding the aduate vertically at the level of the eyes, place the neck of the bottle er the mouth of the graduate and pour slowly until the desired quantity in the graduate. It will be noted that most liquids seem to rise slightly ong the sides of the graduate when the eye is on a level with the surface the liquid. The higher line is caused by the liquid creeping up the walls

of the graduate. The lower line is the true level of the liquid, and it should be brought to the mark on the graduate which measures the desired quantity. If the graduate is not held vertically while measuring, there could be considerable error in the amount measured out. As few as 10 or 15 minims can be accurately measured in the one dram graduate, and as very few photographic formulas ever call for less than one dram of any liquid, this one dram graduate, together with the other sizes mentioned above, should be sufficient for almost any darkroom work.

FORMULAS IN "PARTS"

Formulas are sometimes compounded from various stock solutions which are to be mixed in certain proportions. They might then read in this manner: 1 part Stock Solution A, 3 parts Stock Solution B, 8 parts water. This means that you may select any convenient container to use as a measure, and take as many measures as the number of parts called for of each solution. Using a quart can in the above example, you would take one quart of A, 3 quarts of B, and 8 quarts water.

Should it be found that one ingredient of the formula is a dry chemical and cannot be accurately handled in any other manner than by weight, then all parts of the formula must be measured by weight. Any formula which used the word "part" as a quantity must be made up with all ingredients measured by the same unit, either all by weight or all by volume.

PER CENT SOLUTIONS

It is frequently necessary to prepare a solution having a certain percentage strength of a chemical (dry or liquid). Since water is used in preparing all photographic solutions, per cent solutions are made up with a chemical and water.

FORMULA FOR PER CENT SOLUTIONS WHEN USING DRY CHEMICALS:

A per cent solution will contain as many units of the dry chemical as the percentage strength in enough water to make up one hundred units.

Thus, a 10 per cent solution would contain 10 ozs, of the chemical dissolved in 90 ozs, of water. This formula for preparing per cent solutions can be used proportionately. Therefore, if only a small volume is required and ten was used as the dividing factor, one ounce of the dry chemical dissolved in nine ounces of water would produce the same percentage strength as above. Assuming that a fluid ounce (Av.) of water weighs one ounce (Av.), this gives us ten ounces by weight of the solution, one-tenth of which is composed of the chemical. By the metric system, per cent solutions are easily made. Remembering that one cc. of water weighs one gram, a ten per cent solution would require one gram of the chemical and nine grams of water, to give ten grams of the solution by weight. When this formula is used proportionately, be certain that the same dividing or multiplying factor, whichever the case may be, is used with both the units of the chemical and the units of the water.

Formula for Per Cent Solutions When Using Liquid Chemicals:

A per cent solution will contain as many units of the liquid chemical as

the percentage strength in enough water to make up one hundred units.

Therefore, a 10 per cent solution of a liquid chemical would call for one fluid oz. (Av.) of the chemical thoroughly mixed in nine fluid ounces (Av.) of water. This formula, however, pertains to liquid chemicals, only when they are of about the same specific gravity as water. When using liquid chemicals that have a specific gravity that differs greatly from that of water the proper amount of liquid chemical should be obtained by weight as was done when using the dry chemicals. When measuring liquids by weight, place the graduate, or container to be used, on the scale and ascertain its weight. Add this weight to the weight of the chemical required and then pour the chemical into the graduate until this total weight is obtained. However, if the exact specific gravity of the liquid is known, (44)

the following procedure will be found to be more accurate: Divide the number of ounces (Av.) required by the specific gravity of the liquid and measure out the corresponding number of fluid ounces. Thus, by simple arithmetic, if the unit, of liquid chemicals desired, was six ounces by weight of sulphuric acid (specific gravty 1.83), then 3.3 fluid ounces (Av. of the sulphuric acid would be measured out.

SPECIFIC GRAVITY: The weight of a definite volume of a certain substance, as compared to the weight of the same volume of distilled water, is called the SPECIFIC GRAVITY of that substance. Thus, alcohol weighs about 8/10 as much as distilled water, or its specific gravity is about 0.80. Again, 93 per cent sulphuric acid weighs 1.83 times more than water, or its specific gravity is 1.83. Although all solids also have their specific gravities, in photography, we are only concerned with the specific gravities of liquids or solutions. As a solution becomes more CONCENTRATED (containing a greater amount of chemical) its specific gravity nearly always increases. Thus, the specific gravity is often an accurate indication of the strength or purity of a solution or a liquid chemical, and the latter is often sold with the specific gravity stated.

often sold with the specific gravity stated.

Some acids purchased are found to already be of a certain percentage strength. These acids are sometimes called for in formulas that ask for a strength other than that which is supplied by the manufacturer.

FORMULA FOR PER CENT SOLUTIONS WHEN USING LIQUID CHEMICALS OF A

GIVEN PERCENTAGE STRENGTII:

Multiply the percentage strength of the acid required by the amount of the acid required, and divide by the percentage strength of the acid on hand.

Thus, to prepare 10 ounces of 28 per cent acid from 80 per cent acid,

multiply 28 by 10 and divide by 80. The result is that 3.5 ounces of 80 per cent acid is added to enough water to make up a total volume of 10 ounces of which will have an acid strength of 28 per cent.

Acetic acid, one of the most used of all acids in photographic chemistry, is made in different percentage strengths; the commercial about 28 per cent, the re-distilled 80 per cent, and the glacial 99 per cent. Formulas often call for a solution of 28 per cent acetic acid.

THE HYDROMETER

This instrument is used to indicate the relative specific gravities of liquids, usually in what is called "degrees Baume." The hydrometer consists of a weighted glass bulb. The reading is taken at the surface of the liquid in a glass tube, from a graduated scale above the bulb. The usual hydrometer for photographic work reads zero for pure water, with the readings increasing to 80, which represents the heaviest liquid that can be tested with this instrument. These readings do NOT refer to the specific gravities, but are graduations on the Baume scale which can be converted into specific gravities.

It is seldom ever necessary, however, in the preparation of photographic formulas, to determine the specific gravities of liquid chemicals as they are nearly always indicated on the label of the container that they are in. The main function of a hydrometer, for 95 per cent of all photographic work done today, is to test the strength of the fixing bath.

A fixing bath, when freshly made, should never test below 80 on the Baume scale of the hydrometer. When it is desirable to fix negatives (45)

rapidly, it is permissible to have the fixing bath test considerably above this. A fixing bath to be used for prints, however, should never test above 80 on the Baume scale, because if this condition prevails, the prints will tend to float in the solution and thereby are likely to become stained. Since specific gravities and consequent hydrometer readings, change with variations of temperature, hydrometer readings should always be taken at the temperature indicated on each instrument. This is usually 60 degrees F.

Hydrometers are fragile instruments and easily broken. A slender glass jar to hold the liquid tested is supplied with each instrument. A small wad of cotton should be placed in the bottom of this jar to prevent breaking of the weighted end of the hydrometer. This cotton should either be removed or thoroughly washed before and after each hydrometer reading. When not in use the hydrometer should be kept in the jar.

MEASURING TEMPERATURES

There are two systems for measuring temperatures, in common use, and the photographer should be familiar with each. In this country and in Great Britain the Fahrenheeit (F) scale is the standard. In practically all other countries the Centigrade (C) scale has been adopted, and is steadily becoming popular in this country. Following is a comparison of the two systems:

FAHRENHEIT CENTIGRADE

Freezing point of water 32	20° Freezing point of water (0°
Boiling point of water 21	12° Boiling point of water 100	0°
Degrees freezing to boiling 18	80° Degrees freezing to boiling 100	0°

From the above it will be seen that the Centigrade system has a more logical scale arrangement than the Fahrenheit,

TEMPERATURE CONVERSIONS

Conversions from one to the other of the above temperature scales are often required and are easily made as follows:

FAHRENHEIT TO CENTIGRADE: Subtract 32 and divide by 1.8.

CENTIGRADE TO FAHRENHEIT: Multiply by 1.8 and add 32.

Thus to change 65° F. to C.: Subtract 32 from 65, which leaves 33. Divide this by 1.8, which gives the Centigrade reading of 18.3°.

PHOTOGRAPHIC THERMOMETERS

The thermometers used in photographic work are graduated in the Fahrenheit scale, and are usually of two types. The "stirring rod" type Thermometer is a glass rod having a thermometer in one end, this end being used for stirring solutions when mixing formulas. Due to the danger of breakage, it should be kept in the original container when not in use. The Tray Thermometer is a short glass thermometer mounted on a metal plate which carries the graduations. This type is for use in developing trays and for determining temperatures in small depths of solutions. A reading should not be taken for several minutes after the thermometer has been subject to a change of temperature. Thermometers should always be handled with great care.

SATURATED SOLUTIONS

Some photographic formulas call for a saturated solution of a certain chemical in water. A SATURATED SOLUTION is one that contains all of the substance that the solvent (water) will dissolve, or hold in solution. The solution of chemical that will dissolve in water, differs widely for various chemicals. Thus, a saturated solution of lime (calcium hydroxide) contains less than two-tenths of one per cent of lime, while a saturated solution of potassium iodide contains about 56 per cent of the iodide. Most chemicals are more soluble in hot water than in cold. Thus it is important to know that what temperature the saturated solution is required. Some formulas will state this temperature, if not, it is sufficient to assume the standard temperature for photographic work is 65 to 70 degrees F., and prepare the solution as near these temperatures as is possible.

TO PREPARE A SATURATED SOLUTION, measure out the quantity of water desired in a graduate, or other clean container, and add the chemical a little at a time, stirring continually, until no more of the chemical will dissolve. After this, with a small amount of the undissolved chemical in the bottom of the container, stir at intervals for about an hour, after which the required amount of the saturated solution can be poured off. In case the chemical used has a tendency to warm or cool the water as it is dissolved, it should be added slowly enough to cause but slight change in the temperature of the solution.

SUPERSATURATED SOLUTION

Under some conditions a solvent such as water will hold in solution a greater amount of a chemical than normally forms a saturated solution. This SUPERSATURATED SOLUTION is usually formed by dissolving the chemical in hot water and allowing it to cool. Normally in such a solution, the excess of chemical will go out of solution upon cooling, usually in the form of crystals. The "Crystallizing out" can be illustrated by dissolving "hypo" in hot water until a saturated solution is obtained, then upon cooling, practically the entire volume of the solution turns to crystals of hypo, closely resembling the original crystals.

CARE AND PRECAUTIONS

Graduates, as well as all other glass instruments used in Photography. should be handled with care to prevent chipping and breakage. They should be thoroughly washed before and after use, and kept in racks over the sink in an inverted position. Hot water should never be poured into an empty or cool graduate, as it will surely break. A considerable amount of heat is liberated when an acid and water are joined in solution. For this reason, when acid and water are joined, NEVER POUR WATER UPON ACID. Such a procedure may result in scattering of the acid, which can easily cause blindness, or at the least, bad burns on the skin or clothing. Some liquids form gas within the container which may cause scattering of the liquid when the stopper is loosened. In opening a bottle of acid, hold it at arm's length with the face turned away while the stopper is loosened. If a glass stopper sticks in the bottle, do not use force in loosening it because the knob on the end of it may break off. A light tap with a piece of wood on the neck of the bottle will often loosen the stopper. If not, a cloth dipped in hot water, wrapped around the neck of the bottle, might be used. This will usually loosen the tightest glass stopper. After removing stoppers (either cork or glass) from a bottle of acid, place them upside down on a clean piece of paper while the bottle is being used. Always replace stoppers in the same bottles from which they were taken. When using dry chemicals, avoid air currents which may carry (47)

chemical dust into the darkrooms, causing spots and stains on negatives and prints. Do not brush or blow away chemicals that have been spilled. They may be wiped up with a damp cloth.

PREPARING SOLUTIONS

Chemicals should always be weighed and solutions prepared as far from the darkrooms as is practicable. If space permits, a special room should be used for chemical mixing. Small quantities of solutions are usually mixed in graduates. For large quantities enameled buckets or the final containers can be used. Since a chemical is usually more soluble in hot water than in cold, the quickest way to prepare a solution is to dissolve the chemicals in hot or warm water. Therefore, as a general rule, the chemicals should be dissolved in a small amount of hot water, and diluted to the desired amount with cold water.

PRIMARY RULES

Although different methods are employed in preparing the various solutions used in photography, the following rules apply to all and should be strictly adhered to:

CLEANLINESS: The first step in preparing a solution should be to clean thoroughly all containers and apparatus to be used. Contamination from chemicals previously used may ruin the results of the next solution.

USE PURE AND PROPER CHEMICALS: Be sure of the purity and strength of the chemicals to be used, and do not make substitutions unless from previous experience or instruction you are sure the results will be satisfactory.

USE PROPER WEIGHTS AND AMOUNTS: Formulas call for a certain amount of each chemical. These formulas have been carefully worked out and tested to produce the best possible results. Therefore, be very accurate in your weights and measurements. Use the exact amounts called for in the formula.

DISSOLVE CHEMICALS IN PROPER ORDER: Formulas always give chemicals in the order in which they are to be dissolved. There is a good reason for this, as will be shown later, and failure to follow the proper order will almost always result in the solution functioning improperly. Always make sure that one chemical is thoroughly dissolved before adding the next. In the case of a developing solution, if the alkali is added before the crystals of the developing solution are dissolved, these crystals will be oxidized at the surface and the solution will give fog.

ALLOW SOLUTION TO STAND BEFORE USING: Insoluble impurities are often present in a solution after it is prepared, and these settle out to a large extent if the solution is allowed to stand for a few hours before use. Also, the mixture of the various chemicals becomes more thorough during this time.

(To Be Concluded in October Issue)

NEW FAVORITES

EASTMAN'S three great new films back up their special characteristics with typical Eastman reliability and uniformity. Worthy successors to earlier Eastman emulsions, they are the new raw-film favorites of the motion picture industry. Eastman Kodak Company, Rochester, N. Y. (J. E. Brulatour, Inc., Distributors, Fort Lee, Chicago, Hollywood.)

EASTMAN

PLUS-X

for general studio use

SUPER-XX

for all difficult shots

BACKGROUND-X

for backgrounds and general exterior work



659 Crew Covers

cobb's p

JOHN COBB of England roared over Bonneville Salt Flats in Utah last month in his 2600-horsepower aluminum automobile faster than any human had ever travelled before on wheels. A crew of Local 659 cameramen were on hand to record Cobb's sensational speed of 369.85 miles per hour over a measured mile.

Billy Snyder, head cameraman for Wilding Pictures, commercial production company headquartering at the Selznick lot, made the commercial short sponsored by Gilmore Oil Company, whose products were used by Cobb in his speed record dash.

The shot above, made exclusively for International Photographer, at the conclusion of the record run, shows, reading

from Left to Right: Rod Tolmie, Bill Margolis, two AAA aides. Ellis Carter, Bobby Gough, Earl C. Gilmore, Billy Snyder, Burt Eason, AAA official, John Cobb and Art Pillsbury, chief AAA checker.

The record run was made at 6 a.m., when the salt bed surface is hardest. AAA official timers checked the run, using an electric eye at each end of the measured mile. The motion picture cameras were 1200 feet from the track, which was 100 feet wide and 14 miles long. The measured mile was near the center of the course, allowing about six miles to get sup speed and anothe rsix to slow down.

In order to establish a record, the car must make the run



RECORd

By Mickey Whalen

e way and start a return run within one hour, as demanded racing rules.

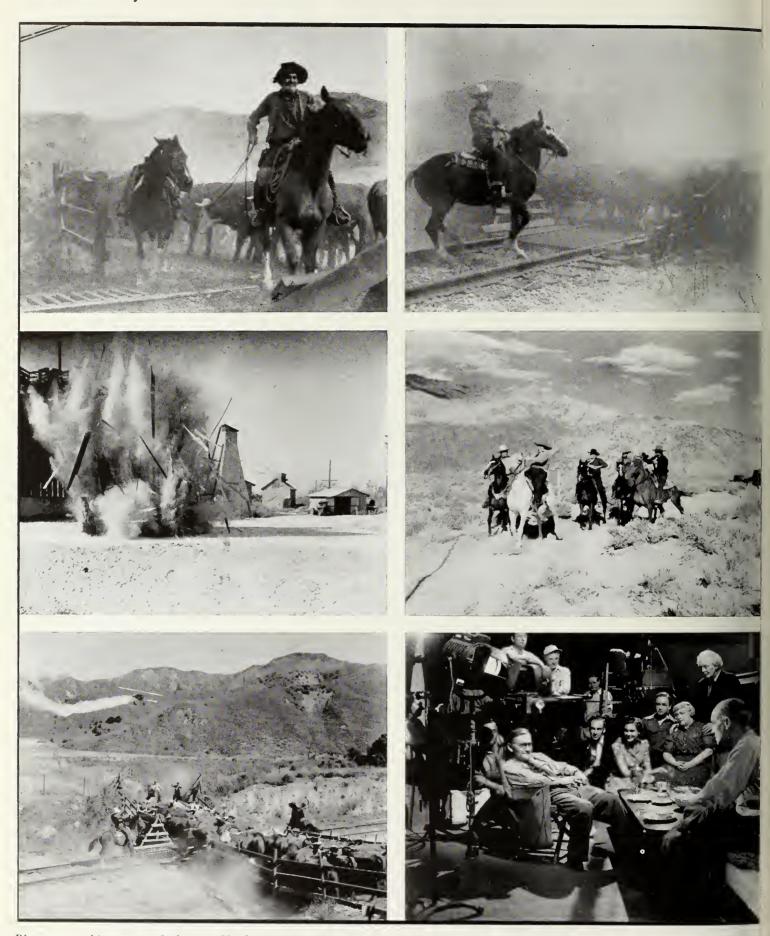
The double run called for super-efficient advance preparation cause at the end of the 14-mile first run, tires, spark-plugs, ..., had to be changed, 150 pounds of ice in special compartent near motor in rear must be replenished, oil changed, and s tank reloaded. Cobb brought eight mechanics from England th him to handle the job.

The "Railton Red Lion," named after its designer, is built imarily to study effects of terrific speeds on engine parts and sign. After cracking the world speed record, Cobb's car was shipped back to England, where every part will be tested and studied in six months of laboratory work to compile technical information for guidance in future design. Same thing applies to tires, set of which breaks down badly during one run.

Cobb and his crew left for England immediately after establishing the record, because a number of them were in the reserve force and on call for military duty.

Snyder and his crew, all members of Local 659, IATSE, found the English sportsman and his aides very cooperative and the unit came back with some remarkable shots of the speed runs.

stills by . . .



Pictures on this page and shot of Charlie and Syd Chaplin on opposite page are from the camera of J. Edwin New, veteran still-

man member of Local 659, IATSE. Shots on this page are from Republic productions. Western scenes are from "Ole

news of the month

Fropean conflict and photography, Leica suspends house organ; diffusion screen used for entire picture; Local 659.

In Lee television cooperation; new Academy committee; SMPE annual sessions to be held in New York in October.

. . . J. Edw. New



Ionterey." Lower left shows crew and cast of Higgins Family. Behind camera are llis Thackery, Al Keller and John McBernie, Local 659 members; Gus Meins, directrocenter chair), and Mary Hart, Lucille Gleason, Harry Davenport and Jimmy leason. Just after the end of the World War, in the spring of 1918, Charles and yd Chaplin posed for this shot as they broke ground for the Chaplin studio at La rea and DeLongpre Avenues in Hollywood. Now, 20 years later, Chaplin resumes prouction activity on a satirical take-off on the war-lords who are heading Europe into nother mad chaos.

War and Photography

● Immediate repercussions will be felt in the photographic field if the European war settles down to a dog-fight. There is no question but that photographic equipment, particularly lenses, will be at a premium and prices may take a rapid rise. This trend is especially indicated for the finer type of precision equipment.

Little specific information is available at present as to exact prospects in this respect for the immediate future. First significant development was the sudden suspension of Leica Magazine, published by E. Leitz, Inc., with the current September issue.

Editorial statement announcing the suspension said:

"At present, world political events have been so fashioned that practical necessities must replace our enthusiasm. We find ourselves in a position whereby it is not possible to publish *Leica Photography*. It is therefore temporarily suspended with this issue. We are, however, going to keep in touch with our Leica family through a bulletin of Leica news which will be issued from time to time, until various factors permit *Leica Photography* to be published again."

Carefully worded announcement obviously referred to current war in Europe. Leitz organization in America has close German affiliation. Suspended publication was one of several dozen interesting journals issued monthly by the large film and camera manufacturing companies to owners of their equipment.

Screen Used Throughout

From George H. Scheibe comes the information that "Island of Lost Men," current Paramount release, was photographed throughout the entire picture with the Scheibe No. 1/16 diffusing screen. Photographers who are interested in diffusion effects should not miss this production.

Don Lee Television

With the resumption of television broadcasting by the Don Lee organization, IATSE technicians are again cooperating on this experimental program. Recent improvements and new developments, combined with the better results obtained through for the first time using professional motion picture technicians on the production end of cameras and lighting are so news-worthy that INTERNATIONAL PHOTOGRAPHER now has in preparation a detailed article for early publication on the Don Lec organization's cooperative television work with members of Local 659 and other West Coast studio locals.

Daylight Sensitometer

• Hollywood Color Film Corporation, formerly Duplex Cinema Equipment Company, announce a new 16 mm daylight operating sensitometer which prints strips automatically. It is claimed to be the only daylight operating sensitometer on the market. It prints from a series of frames of negatives instead of one print.

This firm is busy on 16 and 35 mm color, making 16 mm color a specialty. Their new Duplex camera has a split beam for three colors and on it they can use less than two-inch focal lens with 220 degrees opening in the shutter. This model is not for sale but is built for their own use.

Smithsonian Showing

Sixty prints from Paramount Studio Camera Club will be exhibited at Smithsonian Institute during November, according to wire received from H. S. Bryant, Institute's chief of correspondence and documents, to Farciot Edouart at Paramount. Edouart, head of transparency department, suggested the exhibition to Bryant during latter's recent visit to Los Angeles. Douglas Rudd, chairman of the studio club, is making arrangements for shipment of the photographs to the National Museum.

Tempos and Temperature

Technicians have been engaged at MGN for express purpose of keeping the stage on which Eleanor Powell and Fred Astain dance on a huge mirror, at sixty-five de grees temperature. When stage temperature goes above this point, the glass be comes slippery, making the intricate step of the pair almost impossible. The dance stars are engaged in their first co-starring feature. "Broadway Melody of 1940."

library. President Helen Gladys Percey is head of that department. This is or



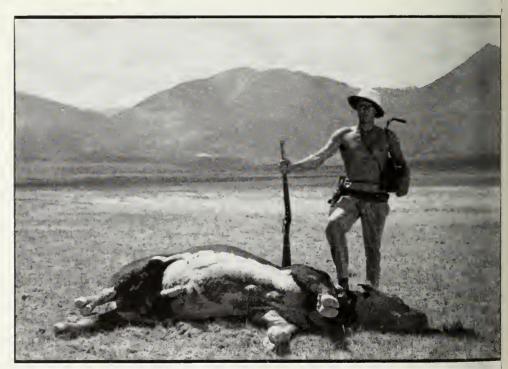
Keyes "Oomph" Cover

● Donald B. Keyes, charter member of Local 659, and one of the pioneer color men in Hollywood, cracked an unprecedented array of national magazine covers with his work on Ann Sheridan in connectio with publicity campaign staged by John LeRoy Johnston for Walter Wanger's "Winter Carnival."

JULY 24, 1930 | GENTS

During July Keyes covers of the "oomph" girl were featured by Life, Look, Picture Play, Movies and Screenland, while other publications and key city newspaper drama pages also featured the shots. It is doubtful if any star has ever received such a smash of front page reproductions in a single month, all made by one photographer.

Keyes, who operates a color laboratory at 2428 Canyon Drive in Hollywood, used the Devin one-shot camera to make his pictures. He prefers the Devin, rating it as the last word in color cameras. All the processing was handled by himself in his own lab.



SHOOTING THE BULL: but the real thing, not the kind the propagandists are passing out these days. The man with the gun is Russell Harlan, veteran members of Local 659, IATSE, and first cameraman on the "Hopalong Cassidy" productions that Harry Sherman turns out with such consistent success, starring William Boyd for Paramount release.

gization's second year of activity. George Mcon, MGM, is vice-president, and Lucy Maroe, RKO, secretary. Society has a coperative program among studio research deartment workers.

Nb Make-up

With RKO using 3,000 extras in big ub scenes during the final weeks of fining "The Hunchback," requiring, in a lition to facial coloring, 3,000 15th c tury wigs, 2,500 beards and whiskers. M Berns, RKO's make-up head, requisitined between 60 or 65 make-up men at hairdressers to handle the mob, or n re than one-fourth of the 225 comprisin the membership of Local 706, IATSE.

Freira Designs New Studio

Paramount's new \$12,000,000 studio pject in West Los Angeles will have Iliam Pereira, nationally famous in incernal development, as chief architect the new plant, announced last month T. Keith Glennan, Paramount operatus manager. Pereira will coordinate activity in conjunction with the planting and actual construction of the studios tough the Glennan office. Glennan also anounced that actual construction work on the new studios will start when necessary clinances are obtained and the storm cain contract for that area completed.

wid Visits 659

Ed David, son of Charlie David, of cal 666, IATSE, Chicago, was a visitor Local 659's new headquarters on Sunset Julevard last month. Younger David is here on a vacation trip and renewed quaintances with a number of members cal 659.

w ARC Committee

Academy Research Council announces appointnt of a committee chairmaned by S. J. Twing of Columbia to consider possible revision specifications for the Standard Release Print ader. Present Standard Leader was revised in gust of 1936, simultaneously with adoption the industry of the Research Council Stand-1 2000-foot Reel.

Purpose of the presently appointed Committee I be to study the specifications with a view recommending changes which may improve. Standard Leader and facilitate its use by atre projectionists. As a first step the Comttee will request the cooperation of all theatre jectionists, theatre circuit technical superors and others in submitting suggestions for saible revisions in the Standard Leader. Membership of the Committee, which will hold

In Memoriam

Harry Forbes, first cameraman, and Harold Porter, second cameraman, were taken by death since last publication of International Photographer. Both had been longtime members of Local 659 and had many friends in the organization. Sincerest sympathies are extended to the families of Forbes and Porter in their bereavement.



GARBO RETURNS: and after a considerable absence from the screen and from pictorial publicity. MGM exploiteers and still photographers once more are seeking new clants to publicize the "glamorous Swede." Hints of a new Garbo, of more hoydenish spirit are borne out by the new stills from MGM, such as this effective shot by Clarence Sinclair Bull, member of Local 659, 1ATSE.

its inital meeting September 15, consists of S. J. Twining, Chairman, John Aalberg, Gerald Best, Sidney Solow, and Ray Wilkinson.

SMPE Meets October 16-19

• Hotel Pennsylvania, New York City, national headquarters of the Society of Motion Picture Engineers, will be scene of 24th annual convention of the Society, to be held October 16 to 19, inclusive. E. A. Williford, President, will preside at many of the convention gatherings. General arrangements are in charge of W. C. Kunzmann, Convention Vice-President, who is also in charge of registration and information. Extensive program of interesting papers and technical presentation is being arranged by J. I. Crabtree, Editorial Vice-President, and by the Papers Committee headed by Sylvan Harris.

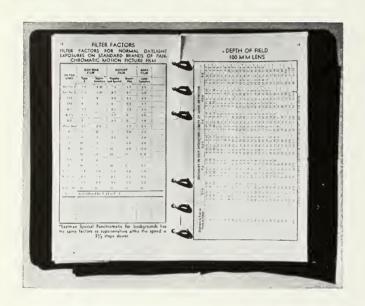
Local arrangements and reception of Society delegates will be in the hands of an 18-man committee headed by D. E. Hyndman, Chairman of Society's Atlantic Coast Section. Hotel and transportation arrangements are in charge of J. Frank, Jr., and his committee. H. Griffin heads committee on convention projection. Mrs. O. F. Neu will act as hostess to the ladies, assisted by her Ladies Reception Committee.

At the annual banquet and dance October 18 at Hotel Pennsylvania, presentations of the annual Progress Medal and Journal Award will be made. The Progress Medal is awarded annually by the Board of Governors in recognition of any invention, research or development which has resulted in a significant advance in motion picture technology. The Journal Award is made by the same Board to the author or authors of the most outstanding paper originally published in the Journal of the Society during the preceding calendar year. The names of the award recipients will be announced at the banquet. Chairman Hyndman emphasized need for making hotel reservations early because of out-of-town crowds attending the World's Fair.

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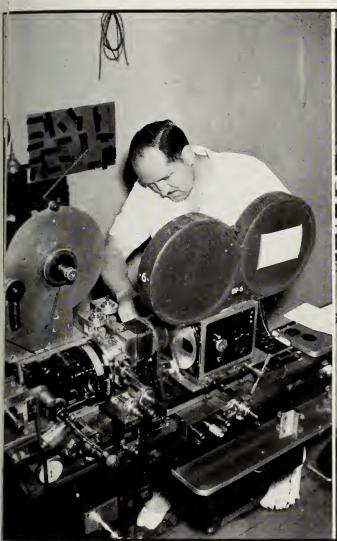
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CLOSE-UPS

Paul Lerpae: Special Effects First Cameraman





NOT ALL CAMERA wizardry is figurative. The special effects branch of motion picure photography includes a number of able gentlemen who combine science and angenuity in a form of magic as baffling as any trickery concocted by Merlin for risiting Connecticut Yankees.

The optical printer is the instrument nost frequently used by the members of Local 659 in the special effects field. The nodern professional camera is a marvel of efficiency, but the optical printer starts where the camera leaves off.

Over at Paramount, it was discovered one day that in an important scene, an American flag had been photographed with he stars on the right instead of on the left, as they should be. To retake the scene with the flag hung correctly would

have cost from \$5000 upwards. The optical printer was called into service and the flag was "doubled in." The job was photographically satisfactory and the saving was obvious.

We single out the Paramount lot as the place where the particular blunder occurred, not because Paramount has more corrective assignments than any other lot, but because Paramount's first cameraman in charge of optical printing and montages, Paul Lerpae, is the subject of this month's Close-ups. Lerpae is a veteran member of Local 659, IATSE, having joined the organization in 1928 shortly after its inception. He has been with Paramount pretty steadily since 1920, when he—like many another of our Close-ups subjects—got his first studio job in the

lah

The eraser on your pencil can remove errors. The job of the optical printer is to do more thon that; the error must not only be removed, it must be corrected. There are obviously few routine assignments for the camera crew handling optical printing. Every new task presents many new and untried angles. The technique, therefore, is the result of the accumulation of experience, combined with extensive experimentation.

The most spectacular aspect of the work of the optical printing cameraman is this sensational and wizard-like ability to save scenes, to solve problems and, in short, to play the role of "safety man" for the rest of the production team. Special problems create opportunities for unusual

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achievements; but the actual daily routine of modern studio special effects departments calls for much more than this.

At Paramount, Lerpae is in charge of optical printing and montages in the special effects department under the direction of Gordon Jennings and Roy Hunter. At other studios the lineup may be a bit different for the various lots each have their own peculiar way of handling such matters even to the details of the actual equipment that is used. Much of the equipment is specially designed and built to meet the ideas of the particular studio department.

Under modern production conditions and increasingly efficient and more dramatically interesting methods of telling stroies on the screen the special effects and montage work is an integral part of the story preparation from the early stages of scripting. Method varies on different lots, but the general procedure calls for advance planning for unusual and dramatically effective photographic twists and stunts, rather than using special effects and optical printing merely as time and money saving mediums.

The production executive, the director, the writers and the photographer, all benefit from suggestions advanced by the department that is best known for its miraculous achievements in saving the studio from the ill-effects of blunders or unsurmountable circumstances that might have marred a scene.

Lerpae gravitated to studio work, when his family came here from Akron, Ohio, where he had been educated, in 1920 and after a spell in the Paramount lab, he graduated starting in 1928 to assistant, second and finally first cameraman rating. Most of his photographic chores have been in the special effects field, for he kept relentlessly after Roy Pomeroy, then head of the studio's special effects work, until he was given a chance. He has specialized ever since in the field that intrigued him from his first day in a studio.

During the past eleven years, Lerpae, like other first cameramen in this particular branch of photography, studied and learned by daily trial and error. And like most of the men in the field, he attributes much of his group's success to the precision equipment and steadily improved film emulsions available to them through the cooperation of manufacturers with the industry.

His steady tenure at Paramount, is, he believes, characteristic of the work in the field, because each studio organization likes to train its own men to its particular method of operation. Familiarity with the particular studio's individual technical gags and devices, trade secrets and pet ways of accomplishing results, is absolutely essential. Consequently, there is less shift-

ing from one lot to another than in any other branch of motion picture photography.

Lerpae, like most other special effects experts, is a difficult subject to round out descriptively. By the very nature of their work, they are inclined not to gabble lengthily about it. They are pleasant but vague about the whole business. Their work speaks for itself, but neither they nor it are inclined to disclose the interesting details of how it is done.

Another thing, special effects workers don't like the emphasis placed by sensation-hunting journalists upon the trickery aspect of their work. Conflict between studio tendency to play mum on all trick stuff in pictures and the expose-minded writers invariably puts them in the middle.

Special effects workers view their jobs as integral parts of the complete task of creating dramatically effective screen entertainment. Because of the complexities involved in recording the most telling treatment possible on celluloid, they can't see why special effects can not be regarded as equally legitimate phase of artistic contribution to screen entertainment with the dramatic tricks of a skilled playwright or the artistic license taken by poets and painters.

As Lerpae points out, nobody would criticize a painter for distorting natural perspective that might appear in a photograph to achieve an emotional effect with his brush; so why assume that anything not photographed in straight newsreel style must be regarded as an attempt to "trick the public."

In other words, special effects tricks and stunts are just another aspect of industry progress toward placing a richer and more effective type of entertainment upon the screen. Whether or not the entertaining or emotional effect was obtained by technical trickery or straight routine "mediumlong shot, close-up" photography is secondary. In fact, the ability to achieve unusual methods for presenting situations and emotions, is the big edge that the motion picture holds over other restricted art forms.

From the technical standpoint, Lerpae thinks most significant progress made recently has been in broadening the possibilities of Technicolor. Even with the added problems of three negatives which must register accurately, great strides are being made in special effects in color.

Future of special effects progress holds great possibilities for the industry, Lerpae believes, dependent entirely upon the enthusiasm generated among production creators for more and trickier special effects work, plus ability of special effects technicians to satisfy this enthusiasm with practical results. On the past record of his branch of the business, he's pretty sure the boys will hold up their end.—GIB.

TRADEWINDS

listman will distribute Bardwell & McAlister Keg-Lite and Foco-Spot; new diffuser from Flat Light Screen outfit; Agfa iproves grid shot service speed; new Kodak data books; news from manufacturers, distributors on new products.



Sardwell McAlister

wo studio mugs, who started with one employee in 1933, to build an electrical equipment business and by the quality of their roduct have made their names familiar to studio cameramen, juicers and grips wherever motion pictures are photographed.

wo MUGS with but a single thought, and at—lamps. The duo was C. Bardwell Id J. G. McAlister, who had been working in the studios for years. The lamps ere intended for motion picture production and they thought they had some new Id worthwhile ideas to contribute to momin picture lighting.

The boys had a bit more than the prorbial shoe-string, but not much. They arted their business in 1933, with one uployee. General service, repairs, rentals, etc., were bread-and-butter side issues to their main scheme, the creation and perfection of new type lamps.

Bardwell & McAlister had practical groundwork from their own experience in Hollywood studios and they slowly built an organization around them that combined practical efficiency with engineering accuracy. The organization turned out lamp after lamp, each with new improvements and refinements.

Soon the quality and service of Bard-

well & McAlister product found itself competing on an even footing with the older firm of Mole-Richardson, and as the friendly rivalry of the two organizations grew keener, the smaller and less progressive firms in the lighting equipment field were forced into the background.

Today Bardwell & McAlister battles M-R on an equal footing and this intensive rivalry of two alert and progressive firms, each headed by men with studio



backgrounds, is responsible for the overwhelming superiority of Hollywood-made motion picture lighting equipment over that of any manufacturing center in the world.

Latest palm awarded Bardwell & Mc-Alister equipment is the conclusion of arrangements with Eastman Kodak Company, whereby the giant film organization will distribute the highly successful B&Mc Baby Keg-Lite, with its companion Foco-Spot through their national chain of stores in the United States and Canada.

The lamp will be exploited as an ideal photographic tool for both motion pictures and still work.

Their business, of course, has been built around the motion picture studios and Bardwell & McAlister have reserved the right to continue to sell all of the studios and recognized producers throughout the world. In addition to the Eastman outlet they have representatives in India, South Africa, Egypt and several South American countries. Bardwell & McAlister are well known to the members of Local 659 and other IATSE locals as "Bard and Mac."

Bardwell is married, has a home in Westwood and has two girls and a boy. Mac is married also and lives in an apartment close enough to the B&Mc plant so that he can get there on a minute's notice; and he himself answers the phone day or night, having a connection in his home so the studios may reach him regardless of time.

From a motion picture standpoint the company's most recent development was announced in the August issue of International Photographer—the Type 19, 5000 watt spot. This lamp has met with enthusiastic approval in the studios because of its light weight and the fact that it operates at a cooler temperature than the average lamp of equal wattage.

The Baby Keg-Lite weighs 25 pounds and is easily handled. Its stand reaches up to $8\frac{1}{2}$ feet. It uses 500 or 750-watt globes, T-20 or T-24 with medium bi-post base.

Foco-Spot is an optical accessory which fits in the diffuser clips of the Baby Keg-Lite. It develops a concentrated beam with sharp edges, either round or rect-



First Column: close-up of Bardwell & McAlister Type T-5 studio lamp; Center: full view of Baby Keg-Lite, with lamp stand and cord; Top Third Column: Baby Keg-Lite with Foco-Spot attached; Below: close-up view from the rear of the Foco-Spot. Latter lamp and the Foco-Spot now are being distributed by Eastman Kodak through their stores in the U. S. and Canada. under arrangement just concluded.

angular. A revolving disk with several sizes of round apertures will, at distance of 15 feet, provide brilliant circles of even light in sizes from $3\frac{1}{4}$ up to 8 feet in diameter. Rectangular shapes are obtained by four sliding mats; these rectangles may be rotated to suit the object. This permits use of concentrated high lights, special shadow and silhouette effect and other lighting tricks with ease and assurance.

As an accessory to the Foco-Spot a background slide may be purchased at slight additional cost. Original designs may be drawn or painted on glass slide and projected on the background.

Portrait photographers and commercial photographers are finding that Foco-Spot has opened a new field of portrait possibilities.

With the Baby Keg-Lite slight pressure on a conveniently accessible control rapidly spreads beam to any desired angle from a 4-degree spot to a 50-degree flood. Calibrated scale, giving focusing arm position, allows duplication of any desired lighting effect. This is an exclusive feature, with patents pending.

The light output of Baby Keg-Lite is three times greater than the average photographic light of equal wattage with conventional optics. At any degree from spot to flood the field is clear and even. The intensity of the light beam is the same regardless of the aperture used.

Following is the price list for the lamp and accessories: Baby Keg-Lite, complete with double riser collapsible stand, 25 feet of rubber covered cable and plug without globe, \$55; Foco-Spot Attachment with rotating disk and adjustable mats \$25; Background Slide, with five clear and one heat-proof glass slides, \$2.50; globes used in Baby Keg-Lite are: 500 watt T-20 clear C-13 medium bi-post globe—either M. P. 3200° K. or C. P. 3380° K, \$4.25; 750-watt T-24 clear C-13 medium bi-post globe, either M. P. 3200° K. or C. P. 3380° K, \$5.50.

New Type Diffuser

● In conjunction with announcement that Flat Light Screen Company is purchasing land to build a plant in the San Fernando

V.ley, Russell Owen of Flat Light annences that the company has developed a ew light diffuser that they expect to exhtually replace jellies and silks in studio sevice. Current demonstrations indicate the the diffuser, made of the same material athe Flat Light screen, has worthwhile psibilities. Continued success of the copany's screen with theatre operators issuch that Flat Light has outgrown its psent Hollywood quarters, hence the nve to the Valley.

Afa Speeds Grid Shots

(Following a custom which the Agfa Ansco C poration established several years ago for the befit of coaching staffs, Agfa 16mm reversal loratories will be prepared to give special serv) on the processing of football films during to coming season. All Agfa 16mm Reversal Loratories in the United States will remain on over the week-ends for processing of footbl films. These will be finished and returned same day as received, permitting viewing of films by the coaches and football enthusiasts whin the shortest possible time after the game. o insure quickest service, all films should be st to the nearest processing station by parcel Lt special delivery, air mail, or by messenger. The films will be returned by special delivery if tee hundred feet or more are involved. Otherve, and also for shipment by air mail, suffient return postage should be sent along with structions. To facilitate identification, the outse of the parcel should be marked "Football

Agfa Reversal Laboratories providing this spe-

service include: Agfa Ansco Corporation, 245 W. 55th Street,

lw York, New York. Agra Ansco Corporation, 433 E. Erie Street,

(icago, Illinois. Agfa Ansco Corporation, 1224 S. Hope Street,

s Angeles, California.

Agfa Ansco Corporation, 121 Julia Street, Jackwille, Florida.

Motion Picture Service Co., 125 Hyde St., San

ancisco, California.

The Calvin Company, 26th and Jefferson Sts., nsas City, Missouri.

n Mail Superflash

Wabash Photolamp Corporation, Brooklyn, Y., announces that their safety coated Wabash perflash Photolamps have been tested by the st Office authorities and okayed for sending ough the mails. Postmasters and other postal iployees have already been notified by publition in the Postal Bulletin of August 17, 1939. Wabash states that Superflash bulbs as packed their present corrugated sleeves can safely shipped parcel post anywhere without breake, if ordinary care is taken in packing. They commend wrapping the bulbs in corrugated per, especially when mailing only a few at time, or packing inside a corrugated carton th a corrugated liner to fill up empty space the carton and separate the bulbs from any her merchandise shipped in the same pack-

5 Cent Exposure Meter

International Research Corporation, makers the Argus camera line, have placed on the arket the inexpensive Argus Vestpocket Exsure Meter, a celluloid wedge type meter that flat and small enough to be carried in a vest cket or lady's handbag without knowing it's ere. A rotating wedge disc indicates brightss of the object aimed at, while a sliding rule tickly and accurately indicates the correct shutspeed and lens aperture to use. Film speeds

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are in Weston ratings. This meter costs only 25 cents complete with leather case.

Argus Jig-A-Mat

● The Jig-A-Mat, recently announced by the International Research Corporation of Ann Arbor, Mich., resembles an ordinary 8x10 enlarging easel, but its top is covered by thirteen separate and differently shaped mats made of red bakelite which can be arranged to form an almost unlimited number of montage combinations. Each mat has its number and indicator, so there can be no mistake as to the paper areas exposed and those that are still to be exposed. The device is said to be very useful in making photomontage prints. It costs \$6.75.

New Kodak Data Books

• Four new Kodak Data Books at nominal prices are available from Eastman Kodak Company, Rochester. The books, in uniform 6x8½-inch format, are:

"Kodak Films," 56 pages, 15 cents. Discusses Kodak Roll Films, Film Packs, Miniature, and Sheet Films. Photographic characteristics of the films, such as speed, contrast, and the like, are described, and the sensitometric terms are explained. Methods of determining film speeds and meter settings are also discussed. Of especial value is the "Specifications" section, which provides full information as to the photographic and physical characteristics, the uses and processing of each film.

"Kodachrome, Photography In Color," 52 pages, 25 cents. A comprehensive discussion of Kodachrome Film, and data on its use for full-color filming. Exposure technique both in daylight and artificial light is treated, and advice on using a photoelectric exposure meter is included. This carefully-planned book offers diagrams and recommendations for night pictures at home in color, as well as daylight shots; covers both movie and "still" filming; and provides full specifications and data tables for Kodachrome, Regular and Type A, and Kodachrome Professional Film, Daylight Type and Type B. A number of illustrations are in color.

"Wratten Filters," 40 pages, 15 cents. This book deals with filters from both the practical and theoretical standpoints, and will appeal equally to the commercial photographer and the serious amateur. Diagrams and illustrations in black-and-white and color supplement the text and demonstrate the use of various filters and the Kodak Poła-Screen. Reference tables aid selection of the proper filter for a given need. Specifications treat each filter individually, giving all data concerning its use, and cover the K-1, K-2, X-1, G, A, F, B, C5, Tricolor Sets, CK-3, and Kodak Pola-Screen, Type 1A.

"Eastman Photographic Papers," 48 pages, 15 cents. Offers full information on the various brands of Eastman photographic papers, and deals at length with their photographic and physical characteristics. A section on "Printing for Quality" is of particular value, and gives helpful suggestions from the choice of paper to the finished print. A number of formulas are included in the section on toning. Specifications contain practical data on the most commonly used papers and include exposure scale values and characteristic curves.

Superflash Improvements

● Wabash Photolamp Corporation announces that all Wabash Superflash Lamps from the No. 1 size up now are equipped with invisible, double-wall safety jackets to prevent accidental bursting or shattering. Possibility of bulb wastage through "contact flashing" has also been eliminated. Among other Superflash safety fea-

tures are incorporation of a blue safety spot in each bulb to indicate fitness for use and protection of neck of each lamp by asbestos safety disc.

Steel Thermometer

New stainless steel thermometer for darkroom use has been introduced by Chess-United Company, New York City. It is guaranteed against corrosion and has a hook attached for convenient suspension from the edge of a developing tray.

Zeiss Ikoflex III

● Featuring a 2½x2½ negative size, new Ikoflex III, with Tessar F:2.8 lens, and priced at \$199 is announced by Carl Zeiss, Inc. New camera carries most of the convenient features found in twin-lens reflex instruments of this price class, and a number of special Zeiss developments. The company also is planning early introduction of a Model 1, which will be priced around \$60.

George Murphy Catalog

• A new catalog of photographic materials has been issued by George Murphy, 57 E. 9th St., New York City. In 274 pages it lists every type of apparatus for professional or amateur photographers.

Enlarging Photometers

● J-M-P Spot Photometer is a small, handy instrument used to determine enlarging exposure time and correct contrast grade of paper for various negatives. Operating on a battery, the Photometer utilizes the bunsen principle for measuring densities of various parts of the negative. More sensitive and precise is the Protyme, which operates on a 120-volt house circuit. Its sensitivity range extends from 1/200 to 1/3 foot-candle. Readings are made on a

sensitive jeweled bearing meter that lights u during use. The J-M-P Spot Photometer list at \$3.95 while the Protyme lists at \$17.50. Bot meters are manufactured by the J-M-P Manufacturing Co., 3034 N. 34th St., Milwaukee,

Dated Slide-O-Mat

● New Dated Slide-O-Mat permits 35 mm double frame, film transparencies to be marked easil for filing after being mounted for projectio in glass slide form. Frame of Slide-O-Mat constructed of metal and no taping, binding, a pasting is necessary. Transparencies may be removed easily at any time. Listing at ten center each, the Dated Slide-O-Mat is distributed heard. G. Gennert, Inc., 20 West 22nd St., New Yorl N. Y.

"Naturalcolor" Expands

◆ Two new plants, one in New York and at other in the South, will be added to the Lo Angeles and Chicago color print finishing of ganization of the Naturalcolor Corporation of 62 East Lake St., Chicago. A nation-wide chaif of Naturalcolor dealerships will also be completed in the near future, and one-week deliver, service now in effect will be speeded up.

Fedco Print Dryer

● The Fedco Print Dryer, announced by th Fedco Products Company, New York, with east ern distribution assigned to the Raygram Corp 425 Fourth Ave., New York City, features compactness, accommodation of smooth and gloss finish prints, polished lacquer drying surface washable canvas, and is in the low price class

Willoughby's Catalog

• New 100-page catalog of equipment and accessories, one of the company's largest and most complete to date, now is available from Willoughby's, 110 West 32nd Street, New York City

NEW PATENTS

By ROBERT W. FULWIDER

Last month the following patents of interest to readers of International Photographer were issued by the U. S. Patent Office. These selections and brief descriptions of new patents were prepared by Robert W. Fulwider, well-known Los Angeles attorney, specializing in patent and trade mark counsel.

No. 2,164,513—OPTICAL CONTRAST METER. Arthur Gaebel, Larchmont, N. Y. Application Aug. 25, 1936. 4 claims.

A meter making use of a photo cell to measure the coefficient of reflection of a portion of a surface, with means to compare one portion of a surface to another portion to determine con-

No. 2,164,653—Apparatus for Treating Cinematographic Film. Fred W. Jackman, Beverly Hills, Calif., assignor to Warner Brothers Pictures, Inc. Application Oct. 28, 1935. 9 claims.

A film treating device in which the film supports are reciprocated while the film is progressing through the solution.

No. 2,165,341—Photographic Objective. John

G. Capstaff and Oran E. Miller, assignors tastEman Kodak Co. Application July 28 1936. 18 claims.

An optical system of variable equivalent focal length, of substantially constant back focus and of substantially constant effective relative aperture, for lenticular film.

No. 2,166,049—METHOD OF AND MATERIAL FOR PRODUCING MULTICOLOR IMAGES. Bela Gaspar Brussels-Forest, Belgium. Application Nov. 30, 1937. 8 claims.

A three emulsion film having dyc-forming substances in the two inner emulsions and none in the outer emulsion, with filter dyes between emulsions.

No. 2,166,440 - CAMERA. Charles F. Jones, Bur lingame, Calif. Application Feb. 7, 1936. Claims.

A camera for taking X-ray pictures in which a camera is out of the path of the X-rays and focussed on a fluorescent screen in the path of the rays by means of an angularly positioned mirror.

No. 2,166,617—Photographic Processing. John

R Weber and Virgil B. Sease, assignors to D'ont Film Mfg. Corp. Application April 7,937. 6 claims.

A poess of treating a multi-layer film to renot only the outer layer of silver salts by treatng he film in a solution containing 50-90% by eight of water soluble thiosulfates and/or bic anates.

No.,167,454—OPTICAL SYSTEM FOR COLOR PHOTRAPHY OR CINEMATOGRAPHY. Albert George Flman, Amersham, England. Application Jan. 1 1938. In Great Britain Jan. 22, 1937. 6 cims.

Anotical system for color photography in which him splitter breaks a beam into three beams of the optical system makes these beams of differnt intensity and passes them through color like.

C2.167,732—PHOTOGRAPHIC MATERIAL. Honore Irkinderen, Belgium, assignor to Gevaert Photoproducten N. V., Belgium. Application May 1937. In Austria May 19, 1936. 11 claims, alti-emulsion film having a fusible layer bewer adjoining light-sensitive layers.

2,168,041—COLOR MOTION PICTURE PROJEC-N. Frederick T. O'Grady, Flushing, N. Y. plication Oct. 15, 1937. 3 claims.

Im for additive color reproduction having linate frames for projection through different of filters and having a special leader strip vir means for determining the proper sequence frames and filters before the film is proceed.

Re Projection, Frederick T. O'Grady, Flushg, N. Y. Application Oct. 25, 1937. 11 times.

roptical unit for motion picture apparatus which the lenses are split by partitions to ruce a plurality of images.

of And Apparatus for Viewing the Same, ms Lewin, Hamburg, Germany. Application ne 16, 1937. In Germany Dec. 10, 1936, claims.

hotographic image and support having fluoont material in it and viewed through a filof a color complementary to the light ema-



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Bell & Howell, Ltd., London, England Claud C. Carter, Sydney, Australia D. Nagase & Co., Ltd., Osaka, Japan Motion Picture Camera Supply Co., New York City Fazalbhoy, Ltd., Bombay, India H. Nassibian, Cairo, Egypt nating from a source of monochromatic ar ultra-violet light which illuminates the image.

No. 2,168,273—Stereo-Optic Instrument. Hal Sauer and Otto Vierling, Germany, assigno to Zeiss Ikon Aktiengesellschaft, Germany. A plication Oct. 30, 1937. In Germany Oct. 3 1936. 6 claims.

A stereoscopic camera in which a single le is focused on an object, and a stereo attac ment is placed in front of the lens, the ster attachment being adjustable to converge on t same object as the lens is focused on.

No. 2,168,433—CINEMATOGRAPHICAL PROJECTINA PPARATUS WITH OPTICAL COMPENSATION. Piet Parvopassu, Rome. Italy. Application Feb. 1 1937. In Italy Feb. 17, 1936. 5 claims. A compensator for varying the height of a projected image produced by a projector whimakes use of a continuously moving film at a rotary compensating prism.

No. 2,168,467—PHONORHYTHM PROCESS AND A PARATUS FOR CARRYING IT OUT. Carl Robe Blum, Germany. Application Jan. 20, 198 In Germany Jan. 30, 1932. 12 claims. A method of producing a sound film in sever different languages so that the speech will consider the speech will be severed.

respond to the movements of the actor.

No. 2,169,004—Low Dye Retention Sub For Photographic Rilm. Gale F. Nadeau, a signor to Eastman Kodak Co. Application Oct. 1030, 122 doi:10.1030

21, 1938. 12 claims.

A photographic film for use in color photo raphy having low dye retention subbing layer

No. 2,169,009—METHOD OF COLOR CORRECTION FOR COLOR PHOTOGRAPHY. Merril W. Seymon assignor to Eastman Kodak Co. Application Nov. 13, 1936. 9 claims.

A method of producing natural color prints l printing color separation negatives through f ters of colors they theoretically are not sen tive to but actually are.

No. 2,169,011—MOTION PICTURE APPARATUS. Ramond W. Wengel, assignor to Eastman Kodi Co. Application Aug. 27, 1936. 7 claims. A method of printing an indicating image each frame of a motion picture film.

No. 2,169,061—Continuous-Film-Treating Appratus. Albert W. Tondreau, assignor to Waner Bros. Pictures, Inc. Application May 1938. 15 claims.

A film treating apparatus for treating continuous lengths of film by spraying it with apparatus liquids as it passes over rollers set 90° to each other.

No. 2,169,229—MOTION PICTURE CAMERA. Gu lermo A. del Valle, assignor to Radio Cor of America. Application Jan. 31, 1936. claims.

A device for indicating the amount of une pected film remaining in a motion picture came

No. 2,169,320—PHOTOGRAPHIC DYESTUFF PICTUI Gerd Heymer, Wolfen, Kreis Bitterfeld, a Werner Schultze, Germany, assignors to Ag Ansco Corp., Binghamton, N. Y. Applicati Nov. 29, 1937. In Germany Dec. 1, 196 8 claims.

A method of producing a color picture in whi the silver is used to bleach the dye and th removed, and the remaining silver halide is th transformed into a silver image.

No. 2,170,438—OOPTICAL APPARATUS. Metr. Waide, assigner to Opticolor, Incorporated. A plication Feb. 21, 1938. 7 claims.

An optical arrangement for color photograp making use of a positive lens, two cylindric lenses, and a plurality of adjustable prisms.

No. 2,171,472—MOVING PICTURE CAMERA. Mauri Albert Dabtel, France, assignor to Suzanne B salie Mathot, Paris, France. Application Ju 21, 1938. In France June 29, 1937. 4 clain A sound insulating box for motion picture camer which is made of a plastic and lined with ru ber. When the Critics
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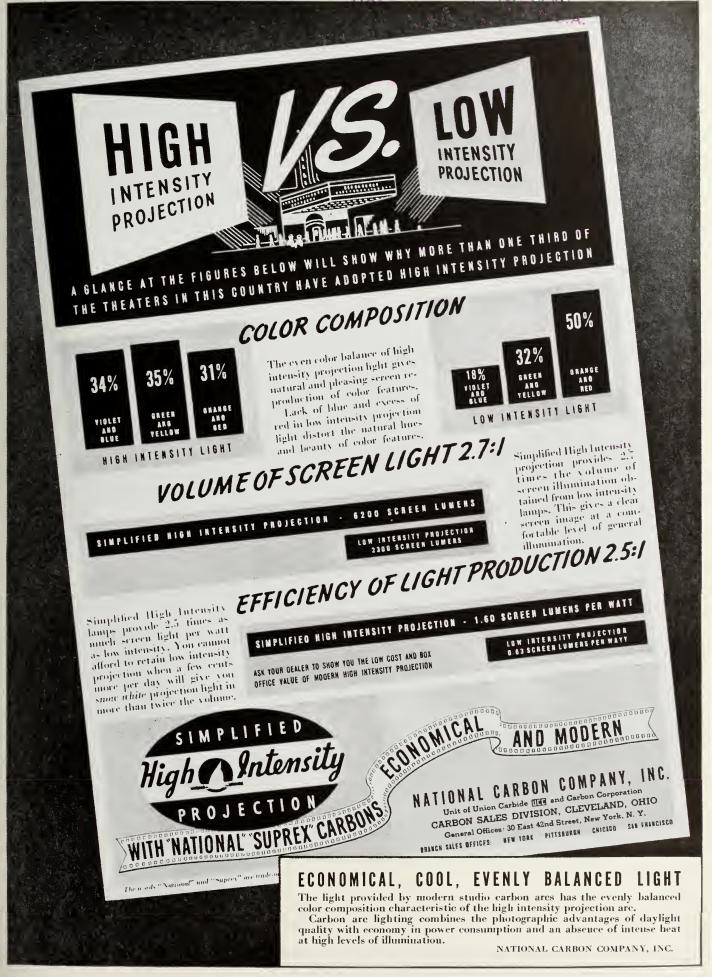
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International photographer

Vol. 11

October, 1939

No. 9

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Marlene Dietrich, starring in Universal's "Destry Rides Again," photographed by Sherman Clark, stillman member of Local 659, IATSE.

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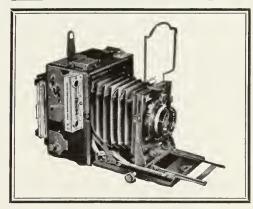
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INE GRAIN RELEASE PRINTS

Early preview of Paramount's "Geronimo" will afford industry chance to determine possibilities for release. Prints in fine grain; sensational improvement of photography and sound reported with new DuPont 222 stock.

THE PAST few years the release print been the bottle-neck that has held up sensational strides toward improved tographic quality and superior sound roduction, despite all the efforts in the ection of emulsions, equipment, producin and laboratory improvements. It has n toward the release print that the Acad-Research Council has directed strenustandardization efforts. Now a new and ical change impends that may bring out the first important revision in maals and technique in general use for ture release prints.

The potential change is the result of perative efforts at the Paramount lot by en Ryder, Roy Hunter and James Wilson, heads respectively of the sound, nera and laboratory departments, workwith the DuPont Film Manufacturing npany, and particularly Hollis Moyse, llywood technical representative.

The much-discussed grain technique of I photography is the basis of the new elopment, which brings to motion pice release prints the use of a new No. tock, developed by DuPont, which been experimented with for nearly a r. The new technique is based upon rections and "speed" improvements in nting and laboratory methods to overne slowness of the fine grain stock.

Recently announced by Paramount after eral months of intensive experimental rk, the new type release print will be veiled for the check-up of industry opinin the preview this month of "Gerono." which already has received striking nments from theatre men and studio ecutive in sneak previews. So successful been the experimental work on "Geron-" that Paramount will immediately put process into high gear for future rese prints.

Advance claims state for the new fine grain positive film that:

"With regard to photography it reduces screen graininess, fuzziness, blur and background distortion to a minimum, provides for a warmth and richness not seen before in films, affords perfect image definition and a new lustrous general effect.

"With regard to sound reproduction, it further eliminates background noise, improves the definition of reproduced speech and conveys fuller dramatic effects in expression and articulation of both vocal speech and musical creations.

Value of fine grain materials and technique has long been recognized in still photography, particularly since the vogue for the precision miniature cameras using 35mm stock, which must be enlarged in most cases to make shots of any value for mounting or graphic arts reproduction.

In motion picture production its use has been confined to sound negative. At MGM work has been done with fine grain negative for originals with push pull. At Paramount, in cooperation with RCA and Eastman, fine grain has been tried on variable area. All the lots have made tests and tried it for special uses—as negative, and almost entirely for sound reproduction.

International Photographer has in the past been cognizant of these experiments and has made mention of work along these lines during the past few years. We have held up publication on a number of detailed theoretical discussions of fine grain possibilities in feature work mainly because there was little enthusiasm amongst studio executives and technicians and we felt that we could not crowd out other material for such speculation. Consequently, when Paramount enthused publicly over the results of their q.t. experiments, we decided to interview Loren Ryder, who pioneered the work, and find out the background and reasons for such enthusiasm.

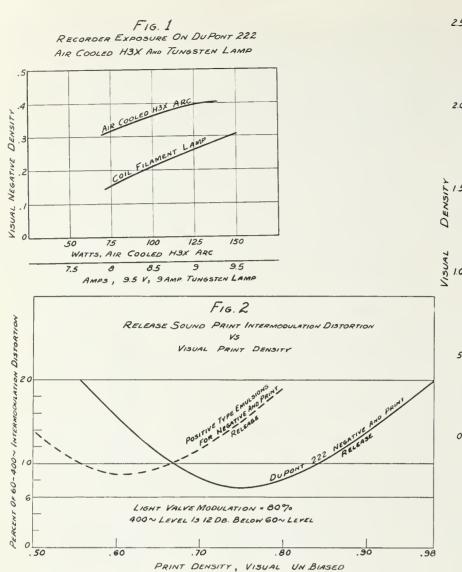
As expected, we learned that the initiative behind the Paramount development came from the sound end, where most fine grain work has been done in the past, rather than from camera lab or other

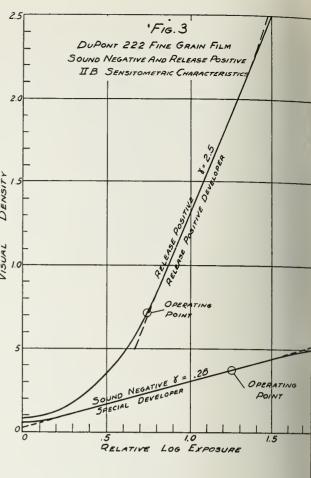
studio departments.

Recently executives working in variable density (Western Electric) sound got together informally to try and devise unified action for any possible use of fine grain to improve the quality of their sound. Paramount's development in the positive field resulted when Ryder and his aides after early investigations, had come to the conclusion that the real fundamental weakness was the above-mentioned bottle-neck of the release print. The Paramount boys agreed to cooperate on the informal committee work on fine grain sound negatives, but also decided to strike out for themselves and explore the possibilities of fine grain for positives. Their sole aim at that time was for better sound. They didn't intend to monkey with photography.

Ryder and his assistants in the sound department at Paramount soon found they would have to call upon the camera and lab departments for cooperation in developing their idea. And to the departments headed by Hunter and Wilkinson they give great credit for the successful solution of many of the problems involved. The DuPont company, through Hollis Moyse made many tests and changes of emulsion in their No. 222 stock to finally achieve the present satisfactory emulsion.

DuPont had to develop a stock that could be handled in processing to meet the print requirements and also complementary sound negative requirements to achieve satisfactory release prints with the new treatment of the sound track. The complementary negative had to match the printing





contrasts of the photographic requirements. And also the new emulsion had to be suited to the new methods of printing and lab processing that were developed.

In approaching the problem the Paramount technicians had to run through the following principal steps:

First, they had to achieve a satisfactory picture negative up to present standards and determine the optimum printing development for best photographic effect in turning out fine grain negative copies;

Second, they had to determine the density of sound printing to best match the photographic requirements:

Third, they had to produce release prints under practical conditions and overcome the slowness of fine grain material.

These steps called for several months of checking and re-checking and arduous establishment of new standards. Particularly important was the setting up of distortion measurements to achieve quailty results in departing from traditional processing methods, while still maintaining traditional photographic quality standards.

It was in this field that they encountered the change in practice that will be most shocking to veteran studio workers—the familiar H. and D. curve, a stand-by since the sound era made precision processing so important, cannot be used for determining processing limits for fine grain work. Newer methods of charting had to be worked out.

In order to get practical results with the slow fine grain stock they did two important things along with a host of other checks and balances. They took an aircooled General Electric mercury light and had it remodelled to their specifications by Los Angeles glass-blowers to operate at new higher intensities to expose sound negative. This was needed to achieve the densities required for the slow fine grain stock. Secondly, the Paramount lab department devised new developing solutions to give higher densities than previously possible.

It was soon discovered that the experiments to blast the release print bottle-neck wide open for better sound also were having an unexpected beneficial effect on photographic quality and with this incentive the work went forward to what the Paramount department heads all believe is a more than satisfactory conclusion.

Accompanying charts cover highlight technical data on the new system of processing.

Figure 1 shows the light valve sensit metric curves for 222 stock exposed I normal Tungsten light vs. the new a cooled mercury arc light which was d veloped by Paramount. It will be not that the curve obtained from the mercu arc light gives a much higher density, i dicating an increase in exposure ratio approximately eight to one.

Figure 2 shows comparative distortion values obtained from intermodulation measurement. In these curves it will noted that the positive type emulsion gives a minimum distortion of 8½ per cent a distortion of 7 per cent for the nestock. It is also interesting to note the where our older stocks have given best sults with a print density of approximate .60 the new stocks have minimum distortion at a density of .75. It should be keen mind that the point of minimum distortion was determined dynamically at that the visual densities are used only flaboratory control purposes.

For the information of those famili-with II B sensitometric characteristics vhave shown in Figure 3 the curves for D pont 222 as used for the sound negati-and release positive as measured with twisual densitometer. In a manner similar to Figure 2 these curves were obtained for the ideal conditions as established by domanic measurements and as such the curves serve only for control purposes conjunction with laboratory processing.



N THE SOUP

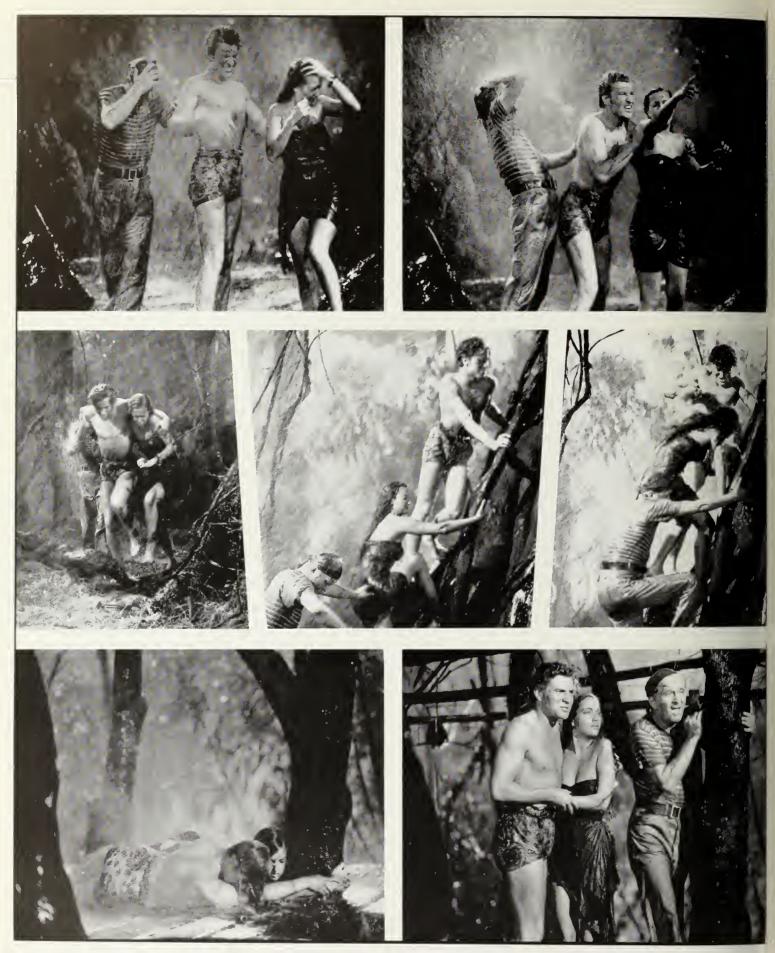
ctors get wet for edification of still photographers as studios get in mood to match "unusual" California weather; pger for MGM, Koffman for Paramount and Clark for Universal, get striking exploitation still pictures.

ALIFORNIA'S "unusual" weather has been subject of much humor to the extent nat among other catastrophes it has even ssisted in the lifting of options for radio medians. It is, therefore, particularly musing, that at a time when the weather as been gravitating between tropical heat

of Sahara proportions and torrential rains, that three studios simultaneously should get into the mood and provide opportunities for stillman members of Local 659 to photograph stars and featured players "in the soup".

On this and the following pages are

samples of the exploitation still pictures for three productions in which the actors really get wet. In addition to being timely, the stills presented herewith are effective and technically meritorious examples of how competent still photographers re-



cord action for the purpose of motion pic-

ture sales punch.

A perusal of national magazines and syndicated picture material will reveal

that these striking shots are rated highly enough by editors to be given generous space in spite of wars and other news problems of the day.

On Page 7 are scenes shot by Virgil Apger from MGM's production, "Remem-ber". featuring Robert Taylor and Greer Garson.



On Page 8 are shots from Paramount's Typhoon", featuring Dorothy Lamour, tobert Preston and Lynne Overman. The photography is by Jack Koffman.

On Page 9 are highlights of a feminine battle of the century that will rank with the famed "Spoilers" fight scenes of silent picture fame. Marlene Dietrich and Una

Merkel staged the battle for Universal's "Destry Rides Again", while James Stewart acted as referee with the aid of a water bucket. Pictures are by Sherman Clark.

mixing weights and measures, part 2

Second installment of Chapter IV from Don Hooper's book, "Basic Photography," presenting reference-worthy material; features comprehensive data on tables, weight and measures used in profession.

USE PURE WATER: Ordinary "tap" water may contain a number of impurities which will affect results desired from the various photographic processes.

Should you be in a locality where you are not familiar with the tap water conditions, inquire from other photographers thereabouts regarding the purity of the water. If it is unduly contaminated, distilled water should be used for the preparation of photographic formulas. The tap water will probably be all right for washing the negatives or prints, but may cause (48)

a sludge or scum on them. This can usually be wiped off with a tuft of damp cotton, a damp chamois, or a sponge that has been thoroughly wrung out.

In these localities if tap water gives trouble from impurities, and distilled water cannot be obtained easily, rain water, from which any suspended matter has been removed, is satisfactory for mixing solutions. This, however, is subject to contamination from various sources, depending upon the manner in which it is obtained and stored.

Some of these impurities have no effect on photographic results, while others are decidedly harmful. In a developing formula containing sodium bisulphite or potassium metabisulphite, calcium salts in the water used may cause the formation of fine needle-shaped crystals of calcium sulphate, which settle out, forming as a sludge on films and prints. Other dissolved salts may crystallize out in the emulsion after drying and detract from the transparency of the negative. Suspended matter in the form of dirt, iron rust, and colloidal material will cause spots and dirty appearing negatives and prints. Water may be purified for photographic purposes in three main ways, i.e., by DISTILLING, by BOILING or by CHEMICAL TREAT-MENT. Distilling is the surest of these methods, and whenever possible distilled water should be used in mixing solutions. Boiling coagulates colloidal material and drives off dissolved gases, and in addition changes some soluble salts into insoluble compounds which, with the colloidal material, will settle out upon cooling. Chemical treatment is applicable to large quantities of water for removing from the solution lime salts, slime, and colloidal materials. This method is common with most commercial water purifications methods but does not remove sodium and potassium salts.

DISSOLVE PRESERVATIVE FIRST: Except in the case of an Elonllydrochinon developer, the preservative of a developing solution is dissolved first. This prevent oxidation of the developing agent which would occur to some extent if it were dissolved first. In the case above, the order should be Elon-Sulphite-Hydrochinon.

ADD HARDENER TO COOL HYPI SOLUTION: Do not add the acid sulphite and hardener solution to a warm hypo bath. Such action will cause the entire solution to turn milky and be rendered unfit for use because of sulphurization.

MIXING SOLUTIONS

Galvanized buckets or similar containers should not be used for mixing

solutions, neither should enameled wear with the enamel chipped off and the iron exposed. Small quantities of developing and other solutions are usually made up in concentrated form. These are mixed with several parts of water to form the strength required. Such concentrated solutions are called STOCK SOLUTIONS, and are kept in stoppered bottles from which the desired amounts are poured as required. Large amounts of solutions however, are usually made up in the strength required for use. In mixing solutions a sparate stirring rod or paddle should be used for each solution and these should be thoroughly washed after use. For large batches, wooden paddles impregnated with paraffin are very convenient. If chemicals upon being dissolved cause much heating of the solution, they should be added slowly, so as to prevent the solution becoming hotter than 125 degrees F Chemicals should be added to the solution slowly with constant stirring If large amounts of powdered chemicals are dumped in the solution at one time, caking, with consequent slow dissolving, will result. Hypo, and certain other chemicals as well, cause cooling of the solution upon being dissolved (49)

This fact can frequently be used to advantage in securing a cool fixing bath during warm weather. Formulas frequently call for "WATER TO MAKE" a certain volume. This simply means that the initial amount of water used is to be somewhat less than the final specified volume. After all ingredients have been dissolved, water is added "to make" up the required volume.

CARE AND STORAGE OF CHEMICALS

The rules for proper care and storage of photographic chemicals are extremely simple. They can be summed up by the following:

- 1. Store in a dry, well ventilated room at normal temperatures.
- 2. Keep in original sealed containers until ready for use.
- Always replace stoppers after using chemicals from bottles or containers.

By following out the above rules, the principal cause of deterioration in chemicals (exposure to air) will be overcome. Some chemicals are very stable and not affected by such exposure. The majority, however, either absorb or give off moisture from contact with the air, and have their chemical composition changed thereby. The list of chemicals so affected is too large to give in this text. The safest procedure is to assume that al photographic chemicals will deteriorate in some way upon exposure to air Following out the precautions necessary in the case of certain chemicals for all chemicals used, will result in orderliness in laboratory work and help to prevent trouble and poor results. Hypo is sometimes received in 100-pound barrels. These containers are not air-proof, and since this chemical, although somewhat hygroscopic, does not give trouble unles stored in a damp room, it should be stored in a dry place. The stronge acids, such as sulphuric, should be stored if possible on lead covered shelves or in such a manner that accidental spilling or breakage will not cause damage from corrosion.

RADICAL MUSIC EXPERIMENT

Modern equipment and studio mixing technique to be used in getting symphonic effect with small orchestra and electric Minipiano; musical dynamics written in decibels for trial.

By GERHARDT DORN

A. F. of M., Local 47

On November 3rd the most brilliant dance season ever assembled in this country opens at the Philharmonic Auditorium. Of particular interest to local dance enthusiasts is the fact that the first concert in the series presents the Horton Dance Group of Los Angeles, most important modern concert group on the west coast. Of equal interest is the fact that there will be used at this concert an array of equipment the

quality of which has never before been available or used for theatrical purposes of any kind.

The writer happens to be composer for the Horton Dance Group, and has written two original scores which will be given their first hearing at this concert. The cost of a full symphony orchestra being prohibitive, I cast about for some means of obtaining the massive tonal effects and flexibility of a large orchestra. This search resulted in what is a unique ocurrence in the history of hte theatre.

Mr. Britton, of Lansing Mfg. Co., has made it possible for me to have the use of one of their large speakers used for the ater sound reproduction installations. I will afford 25 watts output. supplying more power than any symphony orchestra could ever produce. International Pho

OGRAPHER readers will recall that this stem, one of the finest of its kind in the orld, was developed a few years ago at GM, under the supervision of John Hilard, transmission engineer for that stuo. Through this system, and by direct ck-up, will be fed what I consider to be e only successful electric piano on the Immercial market, the electric Minipiano. he vibrations of the strings in this piano e picked electrostatically from the metal ame (which has been polarized), and fed to an amplifying system. This piano can used for direct recording, thus elimining the troublesome problems of microhone pick-up. The tremendous tonal reburces of the Minipiano are varied by rree controls: one for over-all volume, ae for variable harmonic content in the ass, and one for variable harmonic conent in the treble. The instrument can be en in the piano department of Birkelichardson's, who are the distributors in os Angeles.

In addition to this piano, I am using a mall wood wind orchestra and a large ercussion orchestra, both of which will be icked-up with two or three microphones. he problem of picking up the large perussion section that will be used has been olved in an interesting manner. The perussion instruments will be grouped closey around a non-directional microphone. he players will perform at a low level f intensity, and the desired volume will e obtained by mixing. A four channel nixer will be used to coordinate the piano nd the microphones. If there is suffiient time, we plan to write the musical lynamics into the score in terms of decibels, instead of the usual indications of bianissimo, forte, etc. The flexibility and lower of this arrangement far exceeds that of a large orchestra. The performing musiians will play at fairly low levels, so that he musical effects will be entirely conrolled by mixing. In this way the musiian and the engineer are not reducing ach other's efficiency by the compromisng that is characteristic of usual practice.

Results of this arrangement may throw ome light on a fundamental point of disussion between recording engineers and nusicians. If the musicians assigned to a given channel play at a constant intensity evel-preferably the one which produces he most efficient results in tone and reording — then the problems of musical expression can be controlled completely by the mixer on this channel. Probably his level will be a band instead of a critical value; for example, it may be found hat the wood winds record best at a level between 30 and 35 decibels (these figures are arbitrary; the range of this band would have to be discovered empirically for each channel).

The chief purpose of the mixer on this channel will be to keep the level of his channel within this range. In a similar way, all the channels will be controlled, and each one of them will probably have a

different band in which tonal and recording conditions are optimum. The real task goes to the final mixer, the man who will coordinate all of these separate channels, and who should have before him a copy of the musical score with all dynamic indications in terms of decibels. Ideally, the mixer should be the composer of the score, or at least a musician who is thoroughly at home with any musical score, classical or modern. To put it another way, the mixer should function exactly as a conductor does.

New techniques will have to be developed here, because the man conducting by means of mixing channels has absolute control of the tone quality and the volume of the performing instruments. For these reasons, mixing of the first quality is at least as highly integrated and difficult as the conducting of a fine symphony orchestra. In this method the individual sections of the orchestra are segregated; and as a result, the musicians on one channel are unable to hear those on the other channels.

The usual musician's objection to this is a reasonable one, and should be considered seriously by recording engineers. However, I believe that it is possible to meet this objection by offering new methods of performing to replace the old, and that consequent improvement of musical freedom and expression will be well worth any extensions of technical difficulties.

In any event, we are hoping that the forthcoming recital will produce some provocative examples of the possibilities of experimenting with the most modern methods and equipment into the realm of the music of the future.

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Compare these scenes from early films, taken from International Photographer's extensive files of engravings with historical interest, to the layout on the next two pages of modern stills, photographed by Jack Woods and Anthony Ugrin for Twentieth-Fox's spectacular production in Technicolor, "Hollywood Cavalcade," which revives many memories of silent film days.



1888 . . .

Fiftieth anniversary of the motion picture industry celebrated in October; 20th-Fox



1939 . . . "Hollywood "Cavalcade" is timely.

FIFTIETH ANNIVERSARY of the motion picture is being celebrated nationally under the slogan, "Half a Century of Progress," by the industry this month. The celebration is being conducted in such a manner as to be as devoid of commercialism as possible. There has been no solicitation of funds of any sort and no special paid committees handling the campaign. Participation is voluntary with the producers association staff providing suggestions to theatre managers and district exploitation men.

Unusually timely therefore is the release in Technicolor of 20th-Fox's "Hollywood Cavalcade," which dramatically spots the highlights of early silent picture days up to the inception of sound. The picture, in addition to bringing back to the

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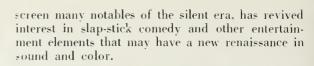
SUPER-XX

for all difficult shots

BACKGROUND-X

for backgrounds and general exterior work



































International Photographer for October, 1939

From Don Lee studios come these shots of IATSE technicians, who are cooperating in television research over W6XAO. Top: Thomas Sawyer, Don Lee television producer; Jockey Feindel, camera director; Mickey Whalen, operator; Art Lasky, assistant; all members of Local 659, IATSE; George M. Haines grip, member of Local 80, IATSE. At right: IATSE crew photographing Maxine Grey; and below, shooting Sylvia Fielding in a can-can dance; Left: televising dead pan comic, Shafter Parker; and Below: in a close-up shot on Maxine Grey. Regular television broadcasts daily were slated to be sent out from KHJ and W6XAO to the L. A. Auto Show this month.











news of the month

SIPE fall convention in New York features best array of papers yet; new class in color print making starts at Hollywod High School, limited to professionals with five years experience in black-an-white: Perry's wartime pictures.

Fall Convention of the Society of Motion Pictic Engineers opens Monday, October 16, at thotel Pennsylvania, New York. Presided over E. A. Williford, SMPE President, four-day elevention will be crammed with presentation of the than 50 technical papers, covering every place of motion picture technology. Demonstrative will be given in conjunction with many of the papers, three of which are scheduled for ching day evening session, which is to be held the World's Fair grounds.

Mayor Fiorella H. LaGuardia will welcome the degates at the informal get-together luncheon to be held Monday following the business sesson which will open the convention. Congressin Bruce Barton and W. G. Van Schmus, Directof the Radio City Music Hall, will be guests chonor at the luncheon.

Every indication points to the highest registrain of members in recent years, according to C. Kunzmann, Convention Vice-President, who ded that an unusually large West Coast contegent has arrived, including representatives from the leading motion picture producing inpanies, and manufacturers of motion picture dipment.

First order of business at opening session will election of officers for 1940. Terms of Enginring Vice-President L. A. Jones, Financial ce-President A. S. Dickinson, Secretary J. ank, Jr., and Treasurer L. W. Davee, expire at d of this year. Nominees for the posts include. Dickinson and Mr. Frank, to continue the ne duties, D. E. Hyndman of Eastman Kodak Engineering Vice-President, and R. O. Strock, Eastern Service Studios, for Treasurer.

Climax of convention will be semi-annual banet and dance Wednesday evening, when prentations of annual Progress Medal and Journal vard will be made. Progress Medal is awarded nually by SMPE Board of Governors in recogy ion of any invention, research or development ich has resulted in significant advance in mon picture technology. Journal Award is made author or authors of outstanding paper origilly published in the Journal of the Society ring the preceding calendar year. Names of award recipients will be made known at the nquet.

Mrs. O. F. Neu will act as convention hostess the womenfolk of the convention delegates, d with a large commitee to assist, has arranged varied program of entertainment and activities. Opening night's session, which will be held at orld's Fair, includes a special television demonation at the RCA Exhibit after the usual clossy hour. Delegates will also witness demonstration of "three dimensional motion pictures," under rection of J. A. Norling, at Chrysler Auditorium the Fair; and a demonstration of "two changes in the A. T. & T. Exhibit building. Delegates Il participate in the latter demonstration.

Convention will conclude Thursday with session the morning on 16mm motion picture equipent, and in the afternoon on motion picture and problems.

Following are some of the outstanding papers ed up for presentation:

OTOGRAPHIC DUPING OF VARIABLE-AREA SOUND; F. W. Roberts and E. Taenzer, Ace Film Laboratories, Brooklyn, New York.

In release print laboratories it is necessary to have some method of quickly making duplicate sound negatives which are used to replace damaged original negative sections. New negatives may, of course, be re-recorded from a release print, but inasmuch as recording equipment is not always available, a suitable photographic process had to be developed. For this process, the following criteria were set up:

The quality of sound from the dupe negative should be high, so that a trained observer would have difficulty in telling where a dupe had been inserted. All developing should be done in the regular release print positive bath at standard developing time. Inasmuch as this bath is in constant use, no special machine need be started to develop a dupe. The dupe negative must have the same optimum print density as the original negative, and the same fog value in order that the inserted dupe might be printed on the same printer light as the original.

The method that was developed operates as follows: Master positives of every reel of a release and the accompanying cross-modulation tests are first printed on high-contrast title stock. A density of 2.20 is used, a family of crossmodulation curves having indicated this value as best. The reels of master positive are stored, but the cross-modulation test positives are detached and printed on regular positive stock to make dupe negative cross-modulation tests. The test from reel 1A is printed at three negative densities, and tests from remaining reels are printed to a density of about 1.80. Cross-modulation prints at several densities are then made from each of dupe negative cross-modulation tests, and from these prints optimum print density for each dupc negative test is determined. Reel 1A gives a three-point slope curve of negative density vs. print optimum density.

The print optima of dupe negative tests are now compared with print optima of original negative tests (these data being on file). If dupe values are different from those of original, the slope curve of 1A is used to find negative density that will yield a print density same as that of original, and these values of corrected negative densities are kept on file for use when it becomes necessary to make a dupe from the stored master positive.

Paper includes a complete cross-modulation treatment of subject and a demonstration.

A Sound-Track Center-Line Measuring Device; F. W. Roberts and H. R. Cook, Jr., Ace Film Laboratories, Brooklyn, N. Y.

Types of instruments now in use for measuring position of sound-tracks on film are not completely suited to use of a release print laboratory. Microscopes using micrometer stages or oculars are slow in operation because they require mental arithmetic to arrive at distance from film edge to the sound-track center-line. Projection types are slow in threading, and require a darkened room. The release print laboratory requires a small quick-threading device which gives a direct reading of sound-track position.

A device that fulfills these requirements has been built, and consists of a curved film-gate in which film is held against a guiding edge by means of a spring parallel. This gate is mounted in V-slides which permit motion in a direction perpendicular to length of film. Motion is pro-

vided by a hand-lever-operated cam, and position of gate is measured by a one-ten-thousandth dial indicator.

Gate has in it a hole directly under sound-track, and beneath is mounted a small incande-scent lamp. Directly above gate is an optical system consisting of a standard 32-mm microscope objective and a 10-power Huygen's eyepiece. The normal cross-hairs of eyepiece have been replaced with a parallel hair device consisting of two very fine hairs whose mounts slide in V-ways perpendicular to direction of film. Both hairs operate together and are operated by a common cam and lever which cause them to move; and as they separate or close, they always remain parallel to each other and equidistant from optical center of instrument.

Operation is as follows: With film in gate operator places a hand on each of the two levers, which are moved simultaneously until two cross-hairs are directly over bias lines or over corresponding peaks of modulated variable-area track. The one-ten-thousandth dial indicator then indicates track center-line position to the nearest ten-thousandth of an inch. With instrument, a film may be inserted and a reading taken in ten seconds.

Volume Distortion; S. L. Reiches, Cleveland, Ohio.

Contention that a linear recording and reproducing system represents the ideal, and that sound handled by such a system will be exactly represented, is not borne out by experience. Systems have been built which meet this requirement within limits that are not detectable by ear and yet these systems do not reproduce sound as it actually is produced. In many cases definite non-linear response curve is provided to compensate for some factor that is not covered by above contention. It is author's thesis that this discrepancy is due to ear sensitivity to frequencies as a function of loudness.

Using ear sensitivity curves presented by Fletcher and Munson of Bell Telephone Laboratories (which have been verified by other observers) it is shown how ear introduces frequency distortion to a linear system when sound is reproduced at a level other than level at which it is produced. It is shown how a sound reproduced above incident sound level introduces excessive low frequencies. Case for a sound reproduced at a lower level is also examined and conclusion is drawn that this case accentuates high frequencies.

It is further shown that possibility of correcting for limited volume range of all sound systems may lie in type of amplifier response curve.

A description is given of three methods used to achieve desired amplifier characteristics: (1) mechanical method, (2) linear-non-linear system, and (3) selective by-pass system. Circuits are given and important operating points of each are discussed. The objections to each system are also given.

Further, brief summary, with diagrams, describes various set-ups used to record with these amplifiers. This covers work for radio, disk record, and sound-film.

Television Control Equipment for Film Transmission; R. L. Campbell, Allen B. Du Mont Laboratories, Passaic, N. J. A television film chain with particular reference to amplifier, sweep, and power circuits in the film pick-up unit is described.

Many improvements in television circuits have been made possible by recent advances in circuits and circuit components in radio and allied electronic fields. Application of some of newer ideas to motion picture film pick-up equipment has resulted in improved performance and simplicity of operation.

Circuit arrangements which permit flexibility in transmission standards are considered and their application discussed. Also anticipation of possible future improvements in picture quality is indicated in some circuit capabilities.

Simplification of controls from the television projectionist's standpoint is discussed.

THE PRODUCTION OF A THREE-DIMENSIONAL MO-TION PICTURE; J. A. Norling, Loucks and Norling, New York, N. Y.

Some problems involved in production of satisfactory three-dimensional motion pictures have not received much mention in literature dealing with stereoscopy. Their practical solution has contributed marked improvements to the three-dimensional picture of today.

Fundamental problem in projecting three-dimensional pictures is that of providing a "right-eye" picture that will reach only right eye and be prevented from reaching left eye, and to do the same for "left-eye" picture. To attain this result two methods have been employed with success, namely: the "anaglyph" in which substantially complementary colors are employed in viewing devices, and polarized light.

The screen surface upon which three-dimensional pictures are projected by polarization methods is of extreme importance. The selection of proper type of screen raises real problems but these also have been overcome in a practical way.

Considerations Relating to Warbled Frequency Films; E. S. Secley, *Altec Service Corp.*, New York, N. Y.

Some warbled frequency films, intended as signal sources for acoustical response measurements appear to have been made and used without full realization of true nature of warbled signal and manner in which such a signal is affected by a non-linear transmission system. It is pointed out that warbled signal is a frequency-modulated signal; hence signal may be represented by a carrier frequency and a series of side-frequencies, all of which are steady and discrete. It is pointed out, and substantiated experimentally, that signal must be regarded in this light when considering effect on it of a non-linear transmission system. Frequency structure of one "warble film" in use is calculated and shown graphically. Fundamental requirements for suitable warbled frequency film having sinusoidal modulations are discussed and values for modulation rate and for modulation depth are recommended. The side-frequency array provided by recommended modulation constants are shown in graph form. Expressions are derived giving frequency relationship and relative amplitudes of side-frequencies resulting from the non-sinusoidal frequency modulation which contains two components of modulation rate, one component having an associated phase constant. The side-frequency structures corresponding to some assumed combinations of two rates are calculated and illustrated. Certain assumptions are made for distortion or departure from sinusoid of a modulating frequency and effects on side-frequency structure are shown. From latter cal-culation recommendations are derived for tolcrances of departure from sinusoidal modulation for a warbled frequency film.

A Transmission System of Narrow Band-Width for Animated Line Images; A. M. Skellett, Bell Telephone Laboratories, New York, N. Y.

New method of transmission and reproduction of line images, e. g., drawings, is described which utilizes a cathode-ray tube for reproduction, spot of which is made to trace out the lines of the image twenty or more times a second. The steps of the complete process are: (1) transcription of line image into two tracks similar to sound-tracks on motion picture film; (2) production from these tracks of two varying potentials by means of photoelectric pick-up devices; (3) transmission of these potentials; and (4) their application to cathode-ray deflector plates to effect reproduction. Satisfactory transmissions of fairly complex images, e. g., animated cartoons, could be effected within a total hand width of 10,000 cycles.

Science and the Motion Picture; H. Roger, Rolab Photo-Service Laboratories, Sandy Hook, Conn.

Motion picture is a product of science. There is ample historical material available for those who wish to convince themselves of this fact, but a brief review is given of the work of Muybridge and Marey in order to clarify the cause of their inventions. Ensuing discussion centers around question: "Has science maintained its interest in moton pctures and has it utilized its advantages to its full extent?"

In this paper word "science" is taken broadly and includes research, dissemination of knowledge, and industrial application. Motion picture's application to science is divided into two distinct categories and are discussed in detail:

- (1) Motion picture as an aid to scientific research:
- (2) Motion picture as a medium for dissemination of knowledge.

Paper concludes with descriptions and demonstrations of interesting material from files of Rolab Photo-Science Laboratories. Also an inside view is given of production activities of an unusual character.

The Problem of Distortion in the Human Ear; S. S. Stevens, *Harvard University*, Cambridge, Mass.

Amount of distortion produced by ear upon a simple sound-wave has been measured by analyzing electrical output of ears of animals and by indirect experiments with human ears. Amount of distortion in a sound-wave which human ear is just able to detect has also been determined, and it is found that threshold of audible distortion is intimately related to amount of distortion occurring in ear itself. Hence transmission characteristics of ear determine tolerances for distortion in sound-reproduction.

REPORT OF THE STANDARDS COMMITTEE; E. K. Carver, Chairman.

Proposals have been received from ISA Sccretariat for international Standardization of raw-film cores; 16-mm sound-film; projection reels; projection reel boxes; 8-mm film dimensions; and definition and marking of safety film.

Most of these proposals differ from SMPE standards only in tolerance. Some tolerances appear to be unimportant and some important. European practice for projection reels differs so widely from American practice that it is deemed impossible to come to an international agreement. Standardization of 16-mm projection reel boxes appears to be outside range of useful standardization.

International standard definition of safety film has been cleared up in all points except question of nitrogen content.

Question of sound-track dimensions for 35-mm and 16-mm film was clarified, to a considerable extent, at Hollywood meeting of Committee but no definite conclusions have yet been reached.

No satisfactory standard for 16-min sound-film sprockets has yet been attained,

Publication of the Academy standard 2000-ft, release print has been delayed pending further questions by Academy.

Some Industrial Applications of Current 16mm Sound Motion Picture Equipment; W. H. Offenhauser, Jr., and F. H. Hargrove, Th Berndt-Maurer Corp., New York, N. Y.

Sixteen-mm sound motion pictures are poter tially one of most effective means through whic industry can develop broad, cost-cutting communication system within organization itself.

Many latent applications for internal films exist; cases in business where improved transfer cideas afforded by films can be most profitable ar almost unlimited. Several specific instances are cited.

Sixteen-mm equipment is simple, easy to oper ate, reliable, and economical. With it, a member of industrial organization who knows his company's products, policies, and structure can reactily produce films that are, in every respect, profit able internal communications media.

THE PROJECTIONIST'S PART IN MAINTENANCE AN SERVICING; J. R. Prater, Congress Theater, Palouse, Wash.

It is duty of projectionist to see that all projection equipment is kept in condition to give excellent service dependably and efficiently, is impossible to accomplish these results by depending upon memory alone. Projectionist muestablish and keep written records of all necesary maintenance data. He must follow a writte schedule in making inspections and in doin maintenance work. He must establish a reliable system for checking and ordering supplies an spare parts at regular intervals.

Projectionist should do as much of actual se vice work as his knowledge, ability, tools, an available test equipment will permit. At leas nine-tenths of trouble shooting should be don before any trouble exists. He should obtain de tailed drawings of internal and installation wirin of all electrical equipment, besides identifyin points at which tests may be made. He shoul prepare a written outline of all tests that coul be made if various troubles existed. Then h should actually make all possible tests in a vance, wherever possible, without causing damage by deliberately creating the trouble and the correcting it. He should immediately record th exact results of each test in the written outlin In this way, simple tests may serve as well as o better than elaborate ones.

Professional service engineer with special te equipment is a necessity to finer and more difficult parts of modern servicing, but projectioni who makes the best of what resources he had can also do a very valuable part of job.

Suggestions for Encouraging Study by Pr Jectionists; F. H. Richardson, Motion Pictu Herald, New York, N. Y.

This paper stresses great importance of expework in theater projection rooms and points of that pride in performance is essential to his excellence. If the status of projection were elvated to a higher plane there would as a result be improved excellence in results both on screand through loud speakers. It offers suggestic concerning contacts of Society with projectionist organizations (IATSE locals).

The Production of 16-mm Sound Pictures of Promoting Safety in the Mineral Industries; M. J. Ankeny, Bureau of Mines, U. Department of the Interior, Pittsburgh, Pa.

Paper deals chiefly with experience in develoing 16-mm direct sound recording technic in producing safety educational films. Attention is call to fact that direct 16-mm recording and photography has great potential usefulness in field education, not as competitor of 35-mm, but means of extending use of sound motion picture into fields that 35-mm is unable to serve.

Described are some of difficulties encounter in underground motion picture photography at how these difficulties were met; also types film used and various printing methods that ha been employed in order to arrive at most sat factory procedure.

Method employed in recording sound direct,

16-mm film, in which double-system variables a is used, is described in some detail.

THEICIAL REVERBERATION FOR MOTION PICTURE STUDIOS; P. C. Goldmark and P. S. Hendricks, Columbia Broadcasting System, New York, N. Y.

An electrooptical method of producing reverration synthetically will be described and latest bdel of equipment will be demonstrated. Method aployed consists basically of recording original ogram on rim of phosphor-coated disk by means a modulated light-source and then picking continuously decaying sound images after a edetermined time interval by means of photolls.

Exponential decay curve of phosphorescent subince will produce an infinite number of secondy sound impulses to which any desired decay aracteristic can be applied. This reverberation and is then mixed with original program in oportion required.

New reverberaton device has been successfully applyed in radio broadcasting and can be used phonograph as well as in motion picture sound cording, where scenic effect or script requires type of sound which, due to deadness of sound age, might not readily be available.

This synthetic reverberation device would reace use of so-called echo chambers, at same ne introducing an appreciable amount of flexility without degrading quality of original sound.

ELIVERING LABORATORY RESULTS TO THEATER PATRONS; J. R. Prater, Congress Theater, Palouse, Wash.

Dscussion emphasizing importance of actually livering benefits of laboratory research and delopments to theater patrons who furnish finanal support for motion picture industry.

Accomplishments in photography, sound recording, projection, and sound reproduction are discussed briefly. Examples are given of various ays in which theater screen results may suffer gardless of excellence of films and equipment. It is pointed out that whatever can be done to crease the projectionist's technical knowledge, bility, and pride in good workmanship will ultitately benefit entire industry. To this end, it is gested that if possible, information from the purnal of the Society of Motion Picture Enineers be made easily available to projectionists.

New Non-Intermittent Motion Picture Projector; F. Ehrenhaft and F. G. Back, New York, N. Y.

Authors have designed projector wherein opcal compensation is effected by means of a ro-ting glass prism. The problem was originally tacked from viewpoint that by eliminating errors therent in rotating glass prism, a projector ould be designed that would be both simple nd practicable. Dimensions of rotating glass rism and its optical placement result from basic ptical laws, and arrangement depends upon size f image and on materials. Errors inherent in ptating glass prism are (1) Non-linear displaceent on screen, causing lack of definition: (a) rrors of center rays, (b) errors of corner rays, c) errors caused by shrinking of film; ;(2) hromatical errors; (3) Spherical errors: (a) aused by size of prism, (b) caused by deviation f light in glass; (4) Astigmatism caused by lovement of prism; (5) Side images (projection f more than one frame on screen); (6) Limited ocus; (7) Defects by reflection.

Elimination of these errors was achieved by:

1) (a) Limitation of effective rotation angle,
b) use of curved gate, (c) establishing tolerable
mits of film shrinkage; (2) Calculating size
nd-displacement of colors at extreme position
f prism; (3) (a) Use of special lenses or addional lenses corrected for glass instead of for
ir, (b) compensation by a curved gate; (4) Sliphaped diaphragms; (5) Use of diverse diahragms; (6) Use of special lenses or additional

lcnses; (7) Diaphragms for condenser and screening off edges of rotating prism. Relation between amount of light on the screen, absence of flicker, and arrangement of condenser and lamp-filament.

These factors will be treated by means of illustrations and diagrams. A working model will be shown and test films projected to illustrate what has been accomplished up to now.

A FLEXIBLE TIME-LAPSE OUTFIT; W. W. Eaton, Eastman Kodak Company, Rochester, N. Y.

Apparatus is described which has been designed to enable single movie frames to be made automatically at intervals conveniently adjustable over a wide range. It is known as Electric Time-Lapse Outfit, and is designed primarily for Cine-Kodak Special. It consists of electromagnet which mounts on camera and interacts with one-frame shaft, and suitably housed condenser-resistance circuits which supply impulses to electromagnet and cause pictures to be taken. By expanding basic times through an interval multiplier, pictures may be made automatically at intervals throughout a range of 1/4 second to 24 hours. Exposure time is completely independent of time between pictures and may be set throughout a range of 1/100 second to 6 seconds. In addition, where artificial illumination is required, lamp control is provided which automatically turns lights on and off for each exposure, regardless of time between pictures. Whole outfit operates on self-contained batteries, and is entirely port-

Automatic Slide Projectors for the New York World's Fair; Fordyce E. Tuttle, Development Dept., Eastman Kodak Co., Rochester, N. Y.

Special slide-changing projectors were designed and built for Kodachrome exhibit in Eastman building at New York World's Fair. Individual screen images are seventeen feet wide and twenty-two feet high. Eleven machines are synchronized so that panoramic scenes one hundred and eighty-seven feet long may be shown. Indexing of slides is controlled by notches in sound-film so that the entire program is automatic.

Slides in each machine are arranged in two rows, and each machine has two gates and two complete optical systems. All slides in one row are rigidly bolted to a ring-gear forty-eight inches in diameter. For each new picture ring-gear is spring-indexed into a new position. While one gear is being moved the other is stationary, and the picture being projected is in stationary row. An optical compensator geared to ring-gear corrects for any inaccuracies in indexing, and image is optically "dowelled" on screen. The accuracy of registration is such that one slide may be substituted for another without movement on screen.

Light-source used is a 2500-watt, high color-temperature tungsten lamp. Water-cells and refrigerated air are used to cool film in gates. Shutter system is located between lamp and gate in order to minimize heat at gate. Shutters in two beams are interlocked in such a way that while they are being moved light to screen is constant. The cross-dissolve may be rapid or slow, depending on type of transition desired.

Slide projectors similar in structure are also being used in Perisphere Building. There slides are projected in rapid enough succession to show motion.

Motion Picture Theater Auditorium Lighting; B. Schlanger, New York, N. Y.

Various functions of motion picture theater auditorium lighting are discussed. Particular analysis is made of lighting which is used during period in which motion picture is projected. Past and present lighting practices in this respect are explained. Advantages and disadvantages of these practices, and a new type of lighting are discussed. It is proposed that illumination levels of interior surface of auditorium be at greater levels than have been heretofore found to exist. A definite relationship between screen brightness and that of the auditorium surfaces is indicated

as desirable. Recent tendencies toward higher screen brightnesses have made a very low intensity lighting in auditorium much more undesirable, and therefore have made it more important to arrive at a new solution for motion theater auditorium lighting. Realism of projected picture can be considerably heightened by proper surface illumination. Controlled reflected light coming from screen and re-reflected from the interior surfaces is discussed as medium for lighting.

Lenses for Amateur Motion Picture Equipment (16-m.... and 8-mm); R. Kingslake, Eastman Kodak Company, Rochester, N. Y.

In all motion picture photography and projection, lenses of high relative aperture must be used. However, on account of small size of amateur frame, focal length is short, and linear aperture of the lens is therefore small, resulting in considerable depth of field. Thus in cine work, great lens speed is not automatically associated with small depth, as is case in ordinary photography.

Moreover, as entire motion picture frame must be seen by eye at a glance, angular field covered must be much smaller than in still pictures which may be examined critically and deliberately. This fact is of greatest assistance to lens designer because high aperture and field are inevitably somewhat incompatible, and types of lens construction which favor aperture generally cover relatively small field.

Perspective considerations usually require a projection lens covering only about half angular field covered by taking lens, which fact enables projection lenses of very high relative aperture to be made. Some types of construction commonly used in amateur cine lenses are described, including account of Kodak line of 16-mm and 8-mm lenses.

Advanced Color Class

• Free, except for the nominal fees of night classes in the Los Angeles municipal high school setup, a course of great value to studio photographic and laboratory technical workers got under way the latter part of last month. It deals with color print reproduction and there still is a possibility to join the group and obtain the full benefits of the course.

There are but a few worthwhile opportunities to study color print work as an exclusive subject. The new course, first to be anywhere near enough to be available to studio workers, is at Hollywood High School on Tuesday and Thursday nights, from 6:30 to 9:30, and is conducted by Stuart Barsby, former member of Local 659, IATSE, and a member of Local 695, ATSE. Barsby was at MGM for years, working on research in color and sound. He is well-known to many IATSE members and his brother, Jack Barsby, is a prominent amateur photographer.

Barsby will thoroughly cover every type of color print reproduction from the familiar Carbro and Eastman wash-off relief to the newer and less familiar techniques, including Chromotone, Belltone, and the comparatively new photo-gelatine method, widely used in England, France, Italy and Germany, and only recently adopted in this country.

Only limitation on entry to the class is that applicants must have had five years professional experience in black-and-white. A few high ranking amateur workers also will be accepted. Present class members are mostly from the ranks of the IATSE, government staff men and professional news and advertising photographers.

In addition to the two class nights per week, arangements are being made for a third night of laboratory work during which each student will be given an opportunity to turn out one print each of the various processes.

Previous to doing studio work, Barsby was for eight years on the staff of the Thomas A. Edison research organization, and has taught color work



here and in New York privately. He has done intensive research in all phases of color, making it a hobby as well as a profession. During his classes he will feature guest lecturers from Eastman, Agfa, Defender and other firms catering to color workers and a number of outstanding local professional workers in color.

Information about the classes may be obtained at the office of International Photographers Local 659 or at Hollywood High School.

War Halts Perry

● Back from his fifth trip to Europe, Harry Perry, veteran member of Local 659, IATSE, brought some informal snapshots that capture the spirit of preparation in Europe for the end of the "twenty year's truce." The pictures on this page show Parisians with gas masks, reading official war notices, digging trenches and boarding up their buildings against possible air raids.

Perry was sent to France to secure background plates for Selznick International's production of "Rebecca," After three weeks shooting in Paris, Aix les Bains, Switzerland and a trip to Monte Carlo, where he spent a week shooting the har-

These war scenes in Paris were photographed by Harry Perry, member of Local 659 IATSE, who recently returned from France after being forced to call off shooting because of war conditions.

bor, Palace grounds and Hotel de Paris, he started getting moving key shots along the Riviera from a camera car, but his work was soon brought to a halt, as the army took over the roads for troop movements toward the Italian border at about the time the German-Russian non-agression pact was signed.

Censorship imposed was so strict that further filming was imposible. Perry carried his gas mask 24 hours a day during the few days he was in Paris, awaiting departure to this country. In the period shortly after declaration of war people expected air raids and gas attacks any moment.

Perry sailed from Le Havre September 11th on the S.S. Washington, Because of the rush of returning Americans, the boat was so crowded that the best accommodations he could get was one of 50 cots that were set up in the boat's swimming pool. There were nearly 2,000 passengers on a boat that usually carried around 900.

The trip from LeHavre to Southampton, Eng-

land, took all night, since the boat barely move along because the pilots had to be very caution about loose mines. Southampton Harbor wa completely mined. Southampton was typical of English defense precautions, with captive ba loons, connected by steel cable, strung out alon the coast line. Thousands of troops were bein loaded into huge transports, headed for France;

The S.S. Washington had huge American flag painted on all sides and on the top deck; an at night en route to New York they were lit wit huge spotlights. The boat arrived in New Yor September 18th. Among the passengers were Mry Joseph M. Kennedy, wife of the American And bassador, Fritz Kriesler, Robert Montgomery, an Senator Reynolds.

Needed additional background plates for the Selznick International production will be photographed in the vicinity of Monterey, California where fortunately for Americans, war is something you read about in the newspapers.

CLOSE-UPS

William Wallace: stillman for Charles Chaplin.

ROM ASSISTING five cameramen at one time or eight dollars a week to one of the most oveted still photography assignments in ollywood is the span of camera activities or William Wallace, who, though still a oung man, is a veteran member of Local 59, IATSE. Wallace is compiling the exploitation still series for Charles Chapn's latest film creation, now in production this La Brea Avenue studio.

Wallace started in the early days of picture production in New York and worked is way out to Hollywood by a series of eographical and financial hops. Born in ew York he went from grade school to ordham Prep and was initiated into moon picture photography during school acations. He quit school in his third year o go to work for the old Edison company the Bronx. He started in as an office oy and finally graduated to the munificent eakly stipend of \$8 per week for which e acted as assistant to five different canaramen.

In those days there was no overtime and no assistants were men-of-all-work. They andled slates, loading and other detail ork. After a year and a half with Edison, Vallace moved one hop toward Hollywood y moving towards downtown to the Metro audio on 61st Street at Columbus Circle—nd with a pay tilt to \$12 per week. Anther year and a half and Wallace moved loser in, to the old Famous Players-Lasky audio, in a converted livery stable on West 6th Street, and with a few more dollars er week in the envelope.

His first detour from a pathway that ventually would have landed him somehere in the middle of Times Square, was hop to Fort Lee, New Jersey, to go to ork for the old Lewis J. Selznick comany at a then sensational salary increase \$25 per week.

Wallace had left school for picture ork in 1916 and after a series of progresive steps, he got his first big opportunity—a newsreel assignment—in 1921, to cover Vashington, D. C. for the Selznick reel. Vallace was handed the assignment by the hen Selznick newsreel chief, Ed Durling, ow well-known to Southern Californians s columnist for the Los Angeles Times. Durling, a newspaperman, spent many ears as a newsreel editor and scenarist efore returning to newspaper work sevral years ago.

The Washington assignment lasted for



William Wallace

eight months, when the newsreel was folded, and Wallace returned to the Selznick lot, where he took his first serious interest in still photography. In 1926 he finally landed in Hollywood, still with the Selznick organization.

Years later he was to work under the Selznick banner again as stillman on "Tom Sawyer" and working with Fred Parrish on "Prisoner of Zenda," a picture which had been made under the original Selznick label and was remade starring Ronald Colman and Madeleine Carroll in 1937 by David O. Selznick, son of Lewis J.

When the old Selznick organization of silent days folded up Wallace returned to newsreel work and spent two years with International News under Joe Hubbell, during which time he covered such assignments as the St. Francis dam disaster and the famed New Year's Day Rose Bowl game when Roy Riegels of California ran the wrong way.

Wallace was one of the early members of Local 659, IATSE. When sound came in he was working back in the studios and "the equipment started to get too heavy." Craft classifications were being laid down more precisely, so Wallace decided to concentrate upon still photography, which had always interested him. He has been in that branch of photography ever since.

Most of his recent work has been done for companies releasing through the United Artists distributing organization, Selznick International, Edward Small and now, Chaplin.

Recent still exploitation assignments have been on such productions as "Duke of West Point," "King of the Turf" and "Man in the Iron Mask," all for Edward Small.

Like most newspaper and still photographers, Wallace is of the opinion that there is room for considerable improvement in the camera equipment available to professional photographers, and in his spare moments he puts in licks on a new type camera for still work that he has been designing for several years.

His present assignment has many unusual aspects. Chaplin is unique. His methods are not those of the mass production studios. And from the exploitation viewpoint, Chaplin the producer, spends his time concentrating on production. He doesn't pay much attention to the sales end while in the throes of creation.

In the history of the Chaplin productions there have been few stills released until the production was completed. This system is contrary to general practice at other studios. Consequently Wallace will spend several months shooting stills without seeing any publicity results of any sort with the exception of the master file that is being compiled and which will be thrown open for general release only when Chaplin has placed the final seal of approval on the finished product.

Wallace has spent much time recently experimenting with color, preferring to work with Dufaycolor and Kodachrome, which can be used with regular cameras as close to black-and-white methods on the set as possible. He was one of the first to shoot Kodachrome production stills on the set—for "Man in the Iron Mask"—without interferring with production. Changing of planned filters on lights was done instead of using complicated filter setups on the camera. Shots were mostly 8x10 and have been widely exhibited in Eastman Kodak stores and received good breaks in national publications.

As a result of intensive experiments on color stills, Wallace now is perfecting a new method for making color prints, which he hopes will be particularly adapted to needs of studio still departments.

CLASSIFIFD DIRECTORY

Camera-Accessory Dealers

Camera Equipment, Inc. 1600 Broadway, N. Y. (Circle 6-5080)

Camera Supply Co. 1515 N. Cahuenga, Hollywood. (GLad stone 2404)

4516 Sunset Blvd., Hollywood (MOrningside 11838. Night—HOllywood 1271)

Hollywood Camera Exchange 1600 N. Cahuenga, Hollywood. (HOllywood 3651)

Motion Picture Camera Sup. Co. 723 Seventh Avenue, N. Y. (BRyant 9-7754)

Camera-Accessory Mfrs.

Bell & Howell Co.

1848 Larchmont Ave., Chica Hollywood, 716 N. LaBrea. (WYoming 3134) Chicago.

Eastman Kodak Company

Rochester, N. Y. Hollywood, 6706 Sta. Monica. (HEmpstead 3171)

Kalart Company 915 Broadway, New York. Hollywood, Taft Bldg.

Devry Corporation

111 Armitage Ave., Chicago.

Fried Camera Company 6154½ Sta. Monica Blvd., Hollywood. (HE. 6716)

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Faxon Dean, Inc. 4516 Sunset Blvd., Hollywood. (MO. 11838)

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Film

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Smith & Aller, Ltd.
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(HO. 5147)

Eastman Kodak Company Rochester, N. Y

J. E. Brulatour, Inc. 6706 Santa Monica Blvd., Hollywood. (HI. 6131)

Agfa-Ansco Corp. Binghampton, N.

Agfa Raw Film Corporation 6424 Santa Monica Blvd. (HO. 2918)

Filters

Scheibe, George H. 1927 W. 78th St., L. A. (TW. 2102)

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FOR SALE—Latest model DeVry sound projector 35 mm. complete, fine condition, with amplifier and speaker. Also DeVry camera. All for \$200.00. Don Malkames, 40 Standish Ave., Tuckahoe, N. Y.

REBUILT SILENCED Bell & Howell with focusing shift-over and magnifier, three lenses, tripod, sunshade, finder, \$1400.00. Motion Picture Camera Supply, Inc., 723 Seventh Ave., New York City. Cable Address: Cinecamera.

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Bell & Howell Co.

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Bardwell & McAlister

7636 Santa Monica Blvd., Hollywood. (HOllywood 6235)

General Electric Company Nela Park, Cleveland, Ohio.

Mole-Richardson, Inc. 941 N. Sycamore, Hollywood. (Hollywood 5838)

National Carbon Company Carbon Sales Div., Cleveland, Ohio.

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International Photographer ANNOUNCES

NEW ADDRESS-6461 Sunset Blvd. NEW TELEPHONE NUMBER HI-9189

TRADEWINDS

hlart's new Sistogun for back curtain high speed synch ronization: Kodak Vigilant and Monitor cameras; Victor's ent Model 16 projector; lap-dissolve rewind attachment for Filmo turret 8; Agfa explains "blacklist" situation.



lifton Maupin, stillman member of Local 659, IATSE, trying out the new Sistogun, for back curtain synchronization with Speed Graphics.

One of the first of the new Kalart Sistouns, designed as a back curtain synchronter for Speed Graphics was tried out just s we went to press by Cliff Maupin, memers of Local 659, IATSE, who is one of the staff still photographers at 20th Cenury-Fox. In next month's issue we plan to feature a layout of shots by Maupin, made with this new high speed synchronter.

The new device brings Kalart standards f design and performance to this com-

paratively new phase of still photography, which has been made possible by the excellent work of the lamp manufacturers in improving the quality and extending the peak intensity of flash bulbs.

Original idea for an entirely new method of flash synchronization with Speed Graphic back curtain shutters was patented by Phillip DeL. Patterson; and Ernest Sisto, well-known New York press photographer, worked with Kalart engineers in perfecting it for mass production. With the new Sistogun, newspaper photographers, studio stillmen and other professionals, can synchronize Speed Graphic back curtains without loss of speed, even at 1/1000 second.

The Sistogun can be installed on either the 3½x4½ or the 4x5 Speed Graphics. It does not exert "braking" action, and features a positive safety switch that prevents premature firing of bulbs while winding the shutter. Its metal finish matches the standard Speed Graphic finish. It is conveniently and inconspicuously attached.

The Sistogun consists of two units, the sub-assembly and the housing. These fit readily under the winding knob and do not interefer in any way with normal camera operation. or use of the rangefinder.

In operation, the first motion of the curtain shaft moves away from the synchronizer, releasing the Sistogun to fire the bulb. The curtain shaft never is interfered with in any way, hence cannot be slowed down. Once released, the Sistogun acts independently of the curtain mechanism.

The new Kalart instrument sells for \$12 complete, and no additional equipment is needed by owners of Kalart Speed Flashes, since the standard Kalart 4½-volt battery case and reflector are interchangeable for both front-shutter and back curtain synchronization. Battery cases of other makes can be adapted provided they allow for focal plane shutter connections. Owners of Speed Graphics without such flash equipment, will need the Kalart 4½-volt battery case, reflector and mount, priced at \$5 complete with battery.

New Kodak Monitors

• Featuring automatic film-wind control and a body shutter release which retracts automatically when camera is closed, two new models, Kodak Monitors Six-16 and Six-20, will be on the market next month. The Monitors are wholly made in the Kodak Rochester factories. Special features include strong aluminum alloy bodies and backs; new system of bed braces which provides 10-point support to maintain lens and shutter rigidly in accurate position; mechanism to prevent double exposures; both eye-level and waist-level finders; a monitor turret with automatic exposure counter, field depth scale, and range-finder clip, and a single push button to control both opening and closing.

There are four Kodak Monitor models. With 5-speed Kodamatic shutter and Kodak Anastigmat F:4.5 lens, the Six-20 Kodak Monitor retails at \$30; the Six-16 at \$35. Both these models are covered in tooled, black morocco-grain Kodadur. The other two models, with the outstanding new 9-speed Kodak Supermatic shutter and Kodak Anastigmat Special F:4.5 lens, retail at



\$42.50 for the Six-20, and \$48.50 for the Six-16. Both have black pin seal grain genuine leather covering and highly polished chrome bed braces with black enamel inlay.

Film-wind control of the Monitors is simple and dependable. A small lever on the monitor turret is set at "wind" and the film is moved until the numeral "1" appears in the red window in the camera back. The lever is then shifted, the exposure counter dial set at "1", and the first exposure made. For each succeeding exposure, the winding knob is simply turned until it stops, the film then being automatically centered. After eighth exposure, control lever is returned to "wind," so that balance of the film and paper trailer can be wound on the take-up spool. Exposures are counted automatically by counter dial on turret.

Top Left: Kodak Vigilant camera, described on Page 24; Top Right: new Victor Silent "16" Projector, described on Page 25; Lower Left: the arrow points to the new lap-dissolved rewind attachment for Filmo turret 8 camera, described on Page 25; Lower Right: new Kodak Monitor camera, described on Page 23.

After the Monitor shutter is released, body shutter release will not operate again until film is wound for next exposure and shutter re-set—thus preventing double exposures. When camera is closed, release plunger retracts automatically, and the eye-level optical finder may be folded down flush with turret top. Each Monitor has two tripod sockets, for vertical and horizontal position, as well as folding supports for leveling camera on a table or similar flat support.

All Monitors take large pictures—the Six-20s, eight $2^{1}/4$ x3 $^{1}/4$ pictures on roll of Kodak 620

Film: the Six-16s, eight $2^{1}2x4^{1}4$ pictures on roll of Kodak 616 Film.

Kodak Vigilant Line

◆ Kodak Vigilants Six·20 and Six·16—new line of fine cameras covering a wide price range—offers a total of eight models: Four in the group of Six·20 cameras taking pictures 2½x3¼ inches; four in the Six·16 group taking 2½x4¼-inch pictures. Construction features include bodies and backs of special high-grade aluminum alloy for

ength and rigidity; new system of bed braces h 10-point support for maximum rigidity of Is and shutter mount; body shutter release with lge rounded-head plunger, which retracts autotically as camera is closed, preventing acci-ental exposures; both eye-level and waist-level w finders; special latch to prevent accidental ening of loaded camera; and tripod sockets for tical and horizontal positions, as well as foldsupports for leveling the camera in vertical horizontal position on a flat surface.

Kodak Vigilants are available in the following

Six-20 Kodak Vigilant, F:8.8 Kodak Anastigat lens, 3-speed Kodex shutter, black moroccoained Kodadur covering. retailing at \$14.50; x-16, with same lens and shutter equipment d finish, \$16.

Six-20 Kodak Vigilant, F:6.3 Kodak Anastigat lens, 3-speed Kodex shutter, Kodadur coverg, \$17; Six-16, \$19.50.

Six-20 Kodak Vigilant, F:4.5 Kodak Anastigat lens, 5-speed Kodamatic shutter, Kodadur vering, \$25; Six-16, \$29.

Six-20 Kodak Vigilant, F:4.5 Kodak Anastigat Special lens, 9-speed Supermatic shutter, nuine pin-seal grain black leather covering th chrome-trimmed side panels inlaid with atching leather, \$37.50; Six-16, with same lens id shutter equipment and finish, \$42.50.

ew Filmo Rewind

Lap dissolves and other theater-movie effects hich require backwinding of film in the camera w can be made with Filmo 8mm equipment. ap dissolve rewind attachment, recently anbunced by Bell & Howell, can be installed on y Filmo double eight camera, either before or ter purchase. Unique feature of this new Filmo rewind is that it counts the frames one by one they are rewound in the camera. Bell and owell also announces that a special fader to ork in connection with the new rewind will on be made available.

ictor Model 16

• An outstanding feature of the new Victor lodel 16 projector is disappearing reel arms hat securely lock into place when extended, and snap back into the body of the projector, ut of the way, making a small compact neat nit. There is no need to dismantle arms or xpose them to injury. With fewer moving parts, lus a new shuttle assembly, the New Victor Silent 16" attains quietness never before pos-ible in silent projectors, and is extremely simple operate.

Automatic "Rewind-As-You-Show" is a big ime saver and convenience. The new Victor Silent 16" rewinds used films as you are show-ing the next reel. It rewinds as many as four eels while showing one. Another Victor feature liminates a common trouble of all projectors in ausing mutilation and damage to films. A se-ies of "trips" immediately throw projector into eutral, if film is not threaded or tracking corectly, or is out of sprocket mesh. This film rotection is the most valuable feature any proector could have.

Specifications of the new model include:

Film Capacity-400 feet 16mm. (Accommolates all smaller reels also);

Illumination—Direct, Super Hi-Power, 750 Watt lamp unless otherwise specified. Accom-modates all lower wattages, including the latest 000 Watt lamp;

Lens-2 in. F:1.6 unless otherwise specified. All focal lengths interchangeable;

Motor—Victor-G.E., fractional horsepower.

Variable rheostat speed control (no brakes);

Conveniences—Lamp switch, Reverse switch,

Motor switch, Pilot light, Tilt, Motor Rewind;

Finish-Silver Gray crinkle (baked). Satin

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Model 16 Victor Master, 16mm Projector, complete as per specifications above, and with one 400 ft. Reel, 12 ft. Attachment Cord, Tool Kit and Operating Manual, complete with carrying case, sells for \$137.50.

Complete except for case, it sclls for \$125.00.

Statement from Agfa Ansco

• From Robert M. Dunn of the Agfa Ansco advertising department comes the following communication with references to the international war "blacklist" situation:

"Readers of International Photographer may have noticed the listing of certain foreign Agfa companies in the British Government 'blacklist,' published recently in daily newspapers. In this connection, we believe the readers of your publication will be interested in the following statement from this Company:

"'Agfa Ansco Corporation of Binghamton, N. Y., must not be confused with the Agfa companies on the British "blacklist." Agfa Ansco Corporation of Binghamton, N. Y., has no connection with the Agfa companies named. All of Agfa Ansco Corporation's products are manufactured in Binghamton, N. Y., and the Corporation's only export trade is to United States possessions and Canada'.

Argus Model M

• New Argus streamlined Model M camera in the \$7.50 price range is equipped to take pictures as close as 24 inches with Argus-designed accessory lenses. The new Model M single or double frame pictures twelve 1x1½ double frames or 24 single frames. This makes it extremely economical to operate, especially when using color film. Its triplet Anastigmat f:6.3 lens is fully color corrected. Miniature size of the new M camera makes it unusually convenient to carryit is small enough to fit in a purse or pocket. Specially spooled Dufaycolor film and a new 35mm Arguspan film, developed especially for the M, are used in it.

IA Men Cover War

 Six IATSE newsreel men now are busy covering the current European conflict. In addition to Norman Alley, who left hurriedly last month on an assignment for News of the Day, Capt. Ariel Vargas is grabbing shots for the same company, Arthur Detita and Ken Murry are covering for Fox Movietone; Neil Sullivan for Pathe and Arthur Menkin is free-lancing.

Local 644 Visitors

• Welcome visitors in Hollywood for a few weeks recently were Charles W. Downs, business representative of International Photographers, Local 644, and Harold Miller, president of the New York local. Here for conferences on new agreements covering newsreel photographers, they renewd many acquaintances with IATSE studio technicians.

Argus Model C3

• International Research Corporation, Ann Arbor, Michigan, is marketing a synchronized photoflash Argus camera, designed to give advanced design details of the C2 camera, plus ability to take photoflash pictures. Selling for \$30, complete with battery handle and reflector, the C3 makes possible brilliant, fast-action pictures in any lighting. A built-in timer synchronizes flash and shutter speeds perfectly. As in the C2 camera, built-in coupled range finder gives critical focusing from three feet to infinity. The Model C3 has a fast f:3.5 "Cintar" triplet Anastigmat lens and shutter speeds from 1/5 to 1/300 seconds.

New Vokar Camera

• A revolutionary new principle in picture taking is claimed for the new All-American Vokar camera soon to be marketed by Electronic Products Manufacturing Corporation of Ann Arbor, Michigan. Proper exposure is definitely assured by a new device to be known as "Variocoupled which automatically sets diaphragm in Control," proper relation to shutter speed for varying light conditions.

New camera takes standard 120 roll film providing 12 exposure of $2\frac{1}{4}x2\frac{1}{4}$ -inch negative size. Triple Anastigmat color-corrected lenses will be

HOLLYWOOD, CALIFORNIA

used, with graduated focusing from 31/2 feet to infinity. Shutters will be of compur type with

lever release and cable adaptor.

Case is leather finished bakelite in compact pocket size measuring only 1½x4x5½ inches. Slight pressure of button catch instantly snaps camera open to picture-taking position. Lens extension is conventional bellows type, opening to 3-inch focal length.

The new Vokar will be offered at popular prices starting at \$15, acording to lens equipment and

finish.

Filmo Price Cuts

• Bell & Howell Company announces that effective October 1. Filmo 16mm model 70-E and 70-DA Cameras will be reduced in price according to following schedule:

70-DA, 1-inch F 2.7 focusing, \$213 to \$193; 70-DA, 1-inch F 1.5 focusing, \$243.50 to \$223.50; 70-DA, 1-linch F 1.5 locusing, \$2-6.50 to \$22.50 to \$22.50 to \$70-25 to \$70-25 to \$99.50; 70-E, 1-inch F 2.7 in focusing mount, \$139 to \$114.50; 70-E, 1-inch F 1.5 in focusing mount. \$169.50 to \$145. Prices on the aTylor-Hobson lenses remain unchanged.

New Tripod Line

• Led by the Photrix Chief, an extremely sturdy tripod for all-around use, even with the heaviest movie camera, Intercontinental Marketing Corporation, New York, introduces a complete line of American built all-metal tripods. Tripods are priced from \$2.75 to \$14.50.

Photrix "22" Enlarger

• Photrix "22" Enlarger, just released by Inter-continental Marketing Corporation, New York, new member of the Photrix family of photographic precision instruments, is an enlarging machine that incorporates tested feature of present enlarger models and adds many radically new ideas, including:

Cool-working 6-volt illumination operating from house current on a built-in transformer: Pivoted lamphouse that tilts to correct distortion, turns horizontally for the projection of all film material; Dustless, scratchless, all-metal negative holders for spotless prints;

Micrometer focusing lens-mount similar to that used in latest-type cameras; Counterbalanced head moves quickly and easily with one-hand operation; Built-in spring holds lamphouse firmly at any height;

Double-condenser optical system, and adjustable light source; Two diffusion discs included for special effects and elimination of grain from negatives.

The completely American built enlarger takes negatives from 35mm to 2½x2¼. It uses lenses of 2, 3 and 3½-inch focal length. Price without lens is \$69.50.

U. S. Gevaert Plant

• Gevaert Company of America, Inc., a New York Corporation, has acquired a factory of considerable size for manufacture of the Gevaert photographic products in this country. Factory is situated in Williamstown, Mass., and its site is of sufficiently large area to permit of future ex-

In a few months Gevaert will be able to supply American made films and other sensitized materials. At present it operates as distributors for Gevaert Photo-Producten, N. V., of Belgium, with headquarters at New York and branches in Boston, Philadelphia. Chicago, Los Angeles and San Francisco. Film finishing operations are carried out on a large scale in New York, where a modernly equipped cutting plant is maintained for cutting and packing to commercial sizes of various types of photographic paper, supplied in full factory rolls by the Belgian Company. Three amateur movie film laboratories are operated in New York, Chicago and Los Angeles.

\$4 SPECIAL COMBINATION OFFER \$4

AS LONG AS THEY LAST

First Edition of "Basic Photography" by Don Hooper, with One Year Subscription to International Photographer

(Or if you are already a subscriber, you may purchase "Basic Photography" for \$2)

There are only a few hundred copies left of the first edition of this practical photographic handbook, in which Hooper for the first time makes available to the photographic student the famed "Navy style" method of instruction. A graduate of the Naval School of Photography, Pensacola, Florida, Hooper has combined the fruits of such training with the experience of commercial photography and research and teaching in the Los Angeles public schools. If you read the Chapter on Photographic Physics which was presented in the March, April and May issues of International Photographer, you will understand the practical value of this work. Teachers and those requiring a handy reference volume on the basic fundamentals of photography will find it an invaluable addition to their libraries.

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herscholastic Contests

Nationwide series of monthly contests for the photographs taken with Argus Candid Camer is announced by the International Research Cooration of Ann Arbor, Michigan. Winning plures will be selected by a group of impartial juges on basis of pictorial interest and photographic workmanship. Eight prizes will be awardeevery month for six months. First prize will be prizes of \$1 each. Prize winning pictures to the first five contests will be entered by Irnational in the National Scholastic Photographic Awards to compete for the grand prize of \$0. Top pictures will be given national publicy by Argus dealers and will be featured in delers' window displays along with the portraits of the students who took the pictures. Entry base for contests will be available at all Argus delers.

Estman and War

♠ Eastman Kodak last month gave official notice ofts future policies and position with the Euroan war situation in mind. Following notice tits dealers is contained in current issue of a capany publication for the trade:

During the period of 1914 to 1918, the price led of Eastman Kodak products in the United Stes was kept practically constant. During the Lean war crisis, the Eastman Kodak Company vl again use every effort to follow a similar Licy, making changes in prices only when incases in costs make it absolutely necessary."

Eastman manufacturing operations in Rochestare not endangered by any shortage of materis on account of the war, employees have been td. Bulletin board notices in Eastman plants al office in Rochester stated that important matials which came largely from Europe in 1914 now produced in the United States.

When war broke out in 1914," bulletin for eployees explained, "the company had to make intic efforts to accumulate materials from coad to sustain our manufacturing operations is Rochester. At that time, adequate supplies of the following important materials were available to be importation from Europe:

Paper to be sensitized: Mostly from Germany, clatin: Mostly from Germany. Sensitizing dyes emulsions: From Germany, Blanc fixe for suring paper: Mostly from Germany, Glass for mes: From Belgium and England. Glass for ses: Mostly from Germany, Certain develops agents: Mostly from Germany. Synthetic oracic chemicals: From Germany.

Persons working in departments where these terials are used will realize how serious any k of them would be.

BUT—the war in 1939 finds that situation impletely changed. Kodak Park now makes all its own paper for sensitizing. The gelatin we in Rochester is now entirely supplied by dak Park and the Eastman Gelatine Corporan, Peabody, Mass. The Kodak Research Labitories now make the sensitizing dyes we need, and fixe is now made at Kodak Park entirely makerican materials. Film has very largely perseded glass since 1914 for x-ray, portrait, dommercial photography; but all glass need, can now be obtained domestically. Increasing tounts of glass for lenses are being made in the United States; and we have on hand a good eck of such foreign optical glass as we require. It requirements for photographic developing ents are now supplied entirely by Kodak Park the Tennessee Eastman Corporation. Kodak rk-produces any synthetic organic chemicals need and also sells organic chemicals to unissities and other laboratories.

THEREFORE—the management is able to inm the employees that our Rochester operations not endaugered by any shortage of materials at can be foreseen as a result of the war."

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PHIENTS

By ROBERT W. FULWIDER

Last month the following patents of interest to readers of International Pho-TOGRAPHER were issued by the U. S. Patent Office. These selections and brief descriptions of new patents were prepared by Robert W. Fulwider, well-known Los Angeles attorney, specializing in patent and trade mark counsel.

No. 2,171,609 — Toning Photographic Prints. Francis H. Snyder and Henry W. Rimbach, assignors to Technico, Inc. Application Jan. 18, 1936. 8 claims.

An improved process of forming a cadmium sulfide image in a photographic toning process.

No. 2,171,722—Motion Picture Apparatus. Lambertus Hendrik de Langen, Netherlands, assignor to N. V. Philips' Gloeilampenfabrieken, Eindhover, Netherlands. Application Nov. 10, 1936. In Germany Nov. 13, 1935. 8 claims.

A motion picture projector making use of an artificially-cooled high-pressure metal-vapor discharge tube.

No. 2,172-262-ULTRAVIOLET FILTER IN MULTI-LAYER FILM. Karl Schinzel, assignor to Eastman Kodak Co. Original application April 29, 1937. Divided and this application Aug. 9, 1938. In Austria May 9, 1936. 3 claims.

A three emulsion color film having colorless ultraviolet light filters between the middle emulsion and the other two emulsions.

No. 2,172,300-HARDENING PHOTOGRAPHIC GELA-TIN AND EMULSION LAYERS. Cyril J. Staud and Grafton H. Keyes, assignors to Eastman Kodak Co. Application March 23, 1938, 14 claims.

A gelatin layer containing as a hardening agent an acetal of an aliphatic aldeliyde.

No. 2,172,352—PH COMPARATORS AND METHOD OF PRODUCING SAME. Donald K. Allison, Beverly Hills, Calif., assignor to National Technical Laboratories, Pasadena, Calif. Application Sept. 20, 1937. 11 claims.

A method of photographically preparing a comparator for use in pH determinations with an indicator dye having various shades and hues at different pH values.

No. 2,173,110—Color Photography. Geoffrey Bond Harrison, England, assignor to Ilford Limited, Ilford, Essex, England. Application Dec. 3, 1936. In Great Britain Dec. 11, 1935. 2 claims.

A method of producing color pictures by use of two emulsions, the second one having a color screen over it.

No. 2,173,490—METHOD OF TONE-AND-COLOR SYN-THESIS IN COLOR PHOTOGRAPHY. Francisco G. Yanes, N. Y. Application March 30, 1938. 9

A color film making use of a four-color subtractive process and having a green and magenta image in register in one frame and having a yellow and blue violet image in register in an adjacent frame.

No. 2.173.518—Photography. Fred W. Jackman. Beverly Hills, Calif., assignor to Warner Bros. Pictures, Inc. Original application April 4, 1936. Divided and this application April 9, 1937. 2 claims.

A method of photography showing a tonal change by simultaneously lighting a subject with two differently colored lights, and simultaneously taking two pictures of the subject through filters showing only one of the lighting effects on each film.

No. 2,173,739—FINE-GRAIN PHOTOGRAPHY. John R. Weber, assignor to Du Pont Film Mfg. Corp. Application May 21, 1937. 6 claims.

A method of fine-grain developing which includes developing of the latent image to a gamma of not greater than 0.5 with a color-forming developer, and then printing the combined silver and dye image onto another sensitized layer.

No. 2,173,866—ART IN CINEMATOGRAPHY OF PRO-DUCING FRACTIONAL DENSITY COMBINATIONS BE-TWEEN DIFFERENT ASPECTS OF A SCENE. Ivan M. Terwilliger, Altadena, Calif. Application Aug. 6, 1935. 17 claims.

A method of printing films to produce a series of image frames composed of superposed component images in partial densities forming composite images of substantially normal densities.

No. 2,174,049—FILM CLIP. Guenther Werner,

Peking, China, assignor to Gerhard Von He sert, N. Y. Application Jan. 24, 1938. 1 Germany June 8, 1937. 6 claims.

A clip for reels of films and composed of a rul ber pad, wider than the distance between the sic flanges of the reel, held to a plate of hard m

No. 2,174,155—Motion Picture Camera. Ot W. Githens, Geo. Kende, and Everett M. Porte assignors to Universal Camera Corp. Applic tion April 7, 1937. 8 claims.

A releasable means for normally preventing tl effective operation of a spring motor.

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Of International Photographer, published monthly at Los Angeles for October, 1939. State of California County of Los Angeles \ ss.

Before me, a Notary Public, in and for the State and County aforesaid, personally appeared Edward H. Gibbons, who, having been duly sworn according to law, deposes and says that he is the Editor of the International Photographer, and that the following is, to the best of his knowledge and belief, a true statement of the owner, management and if a daily paper, the circulation), etc., of the aforesaid publication for the date shown in the above caption, required by the Act of August 24, 1912, as amended by the Act of March 3, 1933, embodied in section 537, Postal Laws and Regulations, printed on the reverse of this form, to wit:

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Publisher, International Photographer, Los Angeles, California. Editor, Edward H. Gibbons, Los Angeles, California. Managing Editor, Herbert H. Aller, Los Angeles, California. Business Manager, Helen Boyce, Los Angeles, California.

- 2. That the owner is: (If owned by a corporation, its name and address must be stated and also immediately thereunder the names and address of stockholders owning or holding one per cent or more of total amount of stock. If not owned by a corporation, the names and address of the individual owners must be given. If owned by a firm, company, or other unincorporated concern, its name and address, as well as those of each individual member, must be given.) International Photographers, Local 659, International Operators of the United States and Canada, 6461 Sunset Blvd., Hollywood, California. President, Hal Mohr; Vice-President, Leon Shamroy; Secretary-Treasurer, E. S. Depew; Recording Secretary, James V. King; Sergeant-at-Arms, Len Powers.
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EDWARD H, GIBBONS, Editor (Signature of editor, publisher, business manager, or owner.)

Sworn to and subscribed before me this 12th day of October, 1939.
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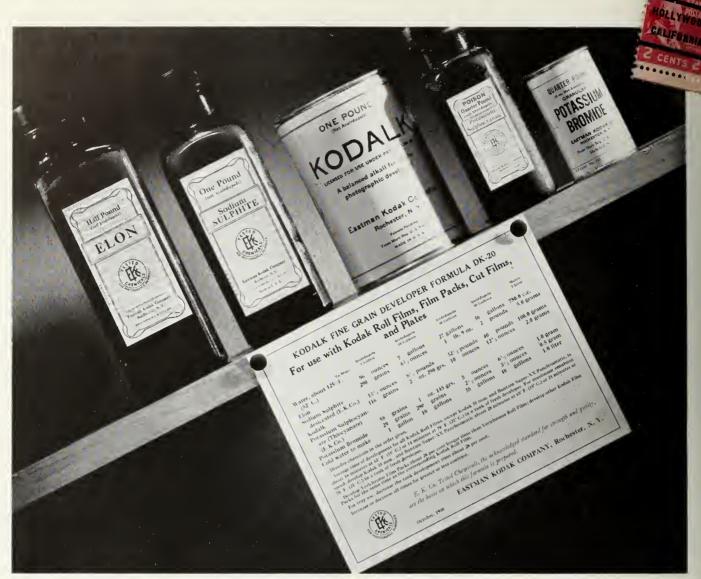
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INTERNATIONAL PHOTOGRAPHER

Vol. 11

November, 1939

No. 10

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On the Cover

Suiting the Thanksgiving atmosphere, whichever day you prefer to celebrate this year, is the effective shot by Jack Koffman, stillman member of Local 659, IATSE, of Ellen Drew, featured in Paramount's "Geronimo."

Editor, Ed Gibbons; Managing Editor, Herbert Aller; Art Editor, John Corydon HILL; Business Manager, HELEN BOYCE.

Contributing Editors: Lewis W. Physioc, Fred Westerberg, D. K. Allison, George HURRELL, J. N. A. HAWKINS, PAUL R. CRAMER, WILLIAM COMYNS, G. M. HAINES. Copyright, 1939, by Local 659, International Alliance of Theatrical Stage Employees and Moving Picture Machine Operators of the United States and Canada.

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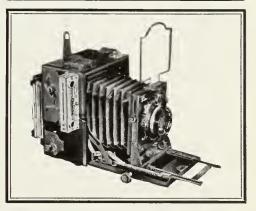
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now i think about photography

A novel and provocative experiment in the field of analysis of motion picture basic materials for creation and the thought processes by which these materials and the fundamental physical laws become "art."

By WILLIAM V. DRAPER

ust first apologize for the audacity of the ing. As if anyone cares how I think about nything. I place the blame squarely on the shoulders of the editor, who insisted at the article be written. However, having duly apologized, I shall proceed as nough I had a perfect right to write the

lly thing.

The unfortunate meditation which led up the remark that resulted in the editor's isistence upon this sort of an article was fter this manner. I was thinking that if I ad my choice of facing the firing squad r designing a dress, the only question ould be whether to refuse the blindfold nd nonchalantly smoke a Murad or just be lyself and collapse in my tracks. To avoid he squad by designing the dress would be tterly impossible. I have no way of thinkig about dresses. I don't know much about resses. To put it more exactly, I have ot done a great deal of knowing about resses. Consequently, I have no tools to ork with. Thoughts about dresses do not ome to me. I have never solicited them. So, I reasoned that perhaps the differnce between a good workman in a given ne and a poor workman amounted to the ifference in the methods they employed in linking about the subject at hand, and so told the editor that perhaps the measure f a man's ability was the clearness with hich he was able to form mental pictures f his subject. The editor told me to write n article about that, so here it is.

Negative is a denial of the facts, Weber says (maintaining denials, the opposite of affirmative). To me a Negative is a e. It bears false witness. It says that black white and white is black. It doen't seem gical that two wrongs should make a ight, but this is the art of illusion, and so nything goes. The Positive lies about the legative and in doing so affirms the oriinal, and because the practice of photography is based upon this reversal of facts the silver salts of an emulsion is at all mes impregnated with a picture. The mo-

The Author

William V. Draper, who penned this provocative experiment in the little-explored field of cinematic philosophy, has been for years in the special effects department at the Hal Roach studios, a lot noted for its accomplishments in trick work and novel effects. Currently the boys in this department, which is headed by Roy Seawright, are engaged in one of the most spectacular jobs in their particular sphere, Hal Roach's novel conception, "1,000,000 B. C." Draper is a veteran member of Local 659, IATSE.

ment it leaves the factory it has a picture of blackness on it. If anyone doubts this statement take unexposed stock, develop and fix, print and if you do not have an image of blackness, send the final results to me along with a little salt and pepper and I will do the rest.

Starting from this basis do anything you wish short of destroying the film, and upon completion of the aforementioned process the results will bear record in a more or less acceptable degree of what you have done to it. Throw it out in the sun for one second or six weeks. Develop, fix and print and your results will be a picture of light. Use some discretion in your manipulation between these extremes and, depending upon your skill, you will have a record of a blend of these two extremes.

Now, having written the preceeding paragraph, it becomes necessary to correct it. It was written in line with the commonly accepted method of reasoning, but it is not strictly true. If we wished to be as nearly correct as possible about one of those few things it is possible to be correct about, then the foregoing is a bit confusing. We have spoken of darkness as one thing and of light as being another thing completely opposed to it. Actually darkness is not a thing at all. It is a void. It is no-thing.

If it is nothing then it has no real existence. It is a word used to denote the absence of light. If darkness has no existence then it has no presence, and if no presence it has no place in which things could happen; so if we store our film in the presence of that which has no presence and consequently no place in which things could happen, then nothing happens to our film. This statement remains true throughout the entire photographic process. So long as you expose film to darkness nothing happens. You don't even have to reckon with it. The only thing then, that must be reckoned with is that which has a real existence. That which is someting. That which has presence in which things can happen. Of course that thing is light.

All material objects are filters. All objects tend to subtract from the source of light. What we commonly refer to as a filter is a regulated means of subtracting from the source. Other objects in a multitude of variations, dependent upon their composition, but always they subtract. They never add. So far as this writer knows, there is no way of amplifying

light.

The film at all times photographs only one thing—the source or sources of light. If no obstructions are imposed between the film and the source of light the results of a completed cycle of development and printing will be identical to the piece we left lying in the sun. You have a picture of all the light the film is capable of receiving. Objects interposed between the source and the film subtract from this complete picture of light, and we have something less than our complete picture which we have learned through training to associate with the illusion which we commonly regard as the object photographed.

What is true of the film in the camera is equally true of the patron of the theatre, whether it be movie or the stage. In the first instance he sits and gazes at the reflection of the arc in the projector. The film acts to filter or subtract varying amounts of light from the arc and everyone is familiar

with the illusion that results. In the legitimate theatre he sits and gazes, indirectly at the flood lights. They are the only things seeable and the actors interposing themselves between the viewer and the lights, subtract from the full brilliance of the light.

I have histed a few of the tools I use in thinking about photography—my concept of the various fundamentals involved. Space in this magazine is too limited to permit any considerable amount of such ramblings, so I will try in a few brief paragraphs to list a few of the tools I use in that specialized branch of photography with which I am connected—trick photography.

Aside from attaining quality in the product, the outstanding problem of the trick photographer is probably that of combining two or more pictures. Ordinarily this is a question of subtracting from one picture and replacing the subtracted portion or portions with other pictures or portions thereof. In line with the preceeding method of reasoning, subtracting from the picture amounts to adding to the filter, or obstacle imposed between the picture and the light source. Whatever obstacles are introduced for one operation must be complemented for the other operation. The object printed or photographed during the operation subtracts its body from the source. To this must be added sufficient obstruction to completely eliminate the picture of the light source in the area to be replaced. Proper manipulation of the obstacles introduced leaves only a problem of balancing the various exposures. The more mechanical the manipulation of the obstacles the less difficulty.

The preceding paragraph described the ordinary method of procedure. Now we will describe one not so ordinary. For instance, if we took that piece of film which we left lying in the sun for six weeks, developed it, fixed it and washed it, we would have present in the gelatine practically all the silver that was in the film originally, except that now, instead of being a silver bromide, it is what is generally thought to be a silver oxide. If we were able, then, to turn this silver oxide back to a bromide we would have something roughly corresponding to raw stock except that it has been light struck, or exposed.

Turning back to a silver bromide is comparatively simple. Almost any combination of Pottasium Ferricyanide, Bromide and water will do the trick, but as a useable emulsion it is useless for it contains a latent image of the sun. The problem then is to destroy the latent image and this can be done by quite a variety of chemical compositions. Anyone sufficiently interested to experiment will find certain of them listed in U. S. Patent No. 2116826, granted May 10.1938, to myself and Frank William Young. Suffice it to say that it can be done and quite easily. Once the latent image is destroyed we have practically

Footnote to War

News release last month from U. S. Department of Commerce:

The Polish Government Institution PAT (Polish Telegraph Agency) at Warsaw, has placed an order for 200 American-made 16mm sound film projectors together with gasoline-electric generators, according to a report to the Department of Commerce from the office of the American Commercial Attache at Warsaw.

This institution is the official news, news reel, and information agency of the Polish Government. The value of the projectors is estimated to be \$65,000. Delivery is to be made in lots of 25 to 50. They were sold in competition with projector manufacturers in Germany, the report stated.

These projectors are to be resold on easy, long-term payment plans to small communities for visual instruction in agriculture and livestock raising, to labor camps and training schools for instruction and entertainment, and to military camps, for visual instruction, as well as for Government purposes. Each projector will be accompanied by an American-made 110 volt, 1,000 watt gasoline engine operated generator so that they can be used if electricity is not available. American educational films concerning agriculture, farm building and construction, and other subjects are to be purchased later, according to the report.

an unused emulsion on which we may photograph a complete picture. It is very slow, but it is also very fine grain.

Now suppose that instead of taking the piece that lay in the sun for the experiment we take a negative that has been properly exposed to—shall we say a living room set with light walls. If we develop and fix such a negative as this, we would have besides the ordinary detail of the furnishings of the set, a rather heavy deposit of silver oxide in those areas representing the white walls. Now, let us further suppose that the assistant director comes in and says, "Holy Moses, we left George Washington's picture off the wall, and that's what our story is about!" This is what we could do in such an emergency.

It is reasonable to suppose that the white wall would be hotter than any part of the picture of George Washington. If such is the case our original picture contains more silver in that area than it would require to render the picture of George. Therefore we have only to convert the developed negative to a silver bromide and kill the latent image and we could rephotograph the picture in its proper place. providing we could get the rest of the original picture to develop up when we developed George. This is a cinch. All we have to do is put a white backing back of the picture of George and it will take care of re-exposing all the rest of the original negative. Since we want all of the picture represented in the film except that portion where George is to be, we cannot possibly overexpose the rest of the film. We simply find the proper exposure for George and shoot, develop, fix, and there you have it.

The last described process, it will be noted, is practically the reverse of the first process. In the first, exposures are added where the silver salts have not been used. In the second, exposures are added where the silver salts have been used. This is

practically the same condition that exists, if instead of attempting to add your second exposure to the unused portion of the negative in the first described process, you develop and print the negative and add your exposure to the positive.

I seem to have wandered afield a bit from the subject of how I think about photography, and shifted to how I practice photography. It seems useless to try and define the thought process without explaining the purpose of the thought and when you have completed the explanation of one you have disclosed the other. The subject is much too large to try and treat in such a brief article. Besides it is just my way of thinking and since my way of thinking is an evolution of my concept of life generally, it is doubtful if it would benefit anyone else who was not willing to accept life from the standpoint I do. If I had anything that might be of general use to the beginner, and certainly the mature photographer does not need my counsel, it would be this advice:

Don't be afraid of film!"

The more you fear film, the more it will trouble you. And don't by any means come to believe that the common chemical treatments of film constitute a limit. I refer to the practices of developing, fixing, reducing and intensifying. It is well nigh impossible to destroy the inherent property of silver salts to react in some way to light and development. Don't hesitate to violate laboratory practices. Remember that common practices are very conservative and routine and intended for the use of the multitude, whereas progress is almost always accomplished by some individualist-someone who refused to be regulated by tradition. If they say, "Don't do this!" do it anyway and find out for yourself whey they told you not to do it. After all there is no way of knowing how terribly sick you can get from getting drunk. except by getting just that sick!

NEW boyer ENLARGER

lew enlarger built in Hollywood by Kenneth Boyer Cochran, home workshop photo-gadateer, who took five months ff from his job to gather ideas and evolve practical design; incorporates many suggestions advanced by professional numbers of Local 659, IATSE.

By M. B. PAUL Member Local 659, IATSE

ROM THE AMERICAN gadgateers have ome a number of valuable developments the field of new photographic equipment devices. Photoflash synchronizers, ubber developing tanks, easels, color camras, enlargers and similar accessories and ids frequently have been initiated by arage and basement inventors.

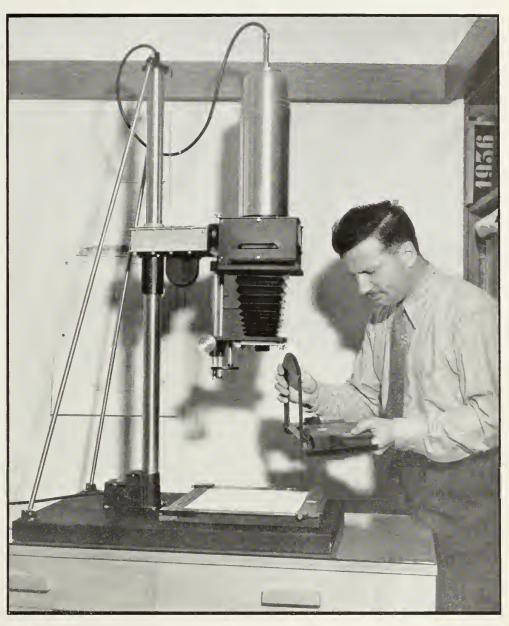
The professional photographer, whether notion picture or still, often is inclined o take the equipment end for granted and o use his experience to overcome limitations in practice, rather than by demanding or suggesting radical changes in equipment itself. Nowhere is this tendency of he professional to get the job done "right tow" with whatever is available more evitent than in the still photography field.

Much of the equipment in use by proessional photographers — even including hat bought brand new—is or should be bisolete. This subject has been well and horoughly discussed by John LeRoy Johnton, the well-known studio publicist and others who have joined Johnny in International Photographer's frequent discustions of still equipment limitations in the past.

Yet in spite of frequent agreement that something should be done, we still are in he same position as Mark Twain's famous rack that, "everybody talks about the veather but nobody ever does anything about it."

Personally, I think that in addition to aking a keener interest in critical analysis of equipment, professionals should encourage the home inventors who have something on the ball. While still awaiting ome more concrete suggestions and actual amples of changes and radical new ideas in the larger still cameras—toward the end of great mobility, ease of operation, etc.—would like to put in a plug for a friend of mine who has turned out an item of nerit—the Boyer enlarger.

Kenneth Boyer Cochran, a young chap n his middle 30's, is one of the garage vorkshop photo-gadgateers. He spends every spare moment at the lathe. Recently the took five months off from his job with he local power company and spent every ninute possible discussing his ideas for a new American enlarger and working out



M. B. Paul. veteran member of Local 659, IATSE, at work with new Boyer Enlarger, to the designing of which he and other studio technicians contributed advice and suggestions.

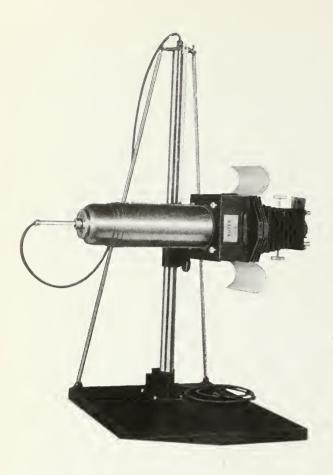
many suggestions from members of Local 659 at the bench.

The Boyer Enlarger has appearance and simplicity of operation that to my mind surpasses any Enropean product of a similar nature. It is a flexible, compact projector which can be used for making brilliant enlargements, wall projections for murals, montage or multiple negative prints and color separations. The lamp housing is of light, unpainted aluminum which retains little heat. The condensor housing allows for introduction of any light diffu-

sion and control the operator may want, and also permits interchange of condensors with a minimum of effort.

The Boyer 45 is the 4x5 model that takes films from 35mm up to 4x5 for enlargements up to 16x20, when using enlarger in vertical position. The construction of the enlarger allows the operator to make larger prints by merely releasing a set screw and swinging the enlarger upward without any dismantling.

To get away from trouble caused by loose wires hanging from the top of the lamp housing of projector, Boyer has con-



Left, full view of new Boyer Enlarger, in position for wall projection; Right, close-up on operating mechanism detail described in accompanying story by M. B. Paul.



cealed them within the rear post and imbedded in the top of rear post a female socket. Before the operator swings the enlarger to a horizontal position he disconnects the plug and replugs when enlarger is in position, this will stop all snarling and breaking of wires.

For making color prints a two phase

switch and voltmeter can be attached enabling the operator to control the projected light.

CREDIT DUE STILLMAN

Most unsung top photographers are the studio stillmen, who spend their entire day promoting personal publicity for others but seldom sample benefits of their own vocation; Richee at Paramount typical unpublicized stillman.

By GIB

In current photographic literature we read reams of technical discussion and critical appreciation for certain masters of photographic effects. But the least credited or discussed photographic group consistently producing stuff of high quality as part of their routine work are studio stillmen. Probably the greatest job of photographic salesmanship in history has been turned out by studio still photographers.

The job of merchandising personalities—and particularly the many facets of feminine allure—has been accomplished under a variety of hindrances, censorships and other limitations never encountered by the widely exploited photographic wizards in other fields. The work of studio still photographers in this respect has held to a consistent high average—as evidenced by the record of success in introducing and exploiting personalities—through many years by many individuals.

Because of the mass production systems

of the major studios, and the fact that ace photography supplied to publications seldom is credited, many studio stillman work in anonymity that amounts to oblivion in comparison with the personal publicity accorded photographers in other fields.

Typical of the many competent and consistent stillmen who translate star personalities into photographic art that meets the requiremens of reproduction in many graphic arts mediums, is Eugene Robert Richee, who has been on the job for many years at the Paramount lot. Richee is one of a number of stillmen who are recognized within the trade as capable of turning out work on a par with that of the most widely-publicized photographers of the day.

But—who ever heard of Richee? How often does his name appear in connection with exploitation art? Certainly he's known to members of Local 659, to Paramount studio publicity men, to stars and to many editors throughout the country.

That's within the rade. Few among the general public and its fullsome quota of photography fans ever heard of Richee or many another studio stillman, whose expert work year in and year out plays a major role in the job of luring the public's shekels under box-office windows at the nation's picture houses.

Illustrated on the opposite page are four striking stills from portrait sittings by Richee. In accomplishing the job of presenting feminine charm and personality they are tops, entirely beyond their routine

OPPOSITE PAGE: Four striking shots by Eugene Robert Richee, veteran stillman member of Local 659, IATSE, on the Paramount lot; Top Left, Patricia Morrison; Top Right, Virginia Dale; Lower Left, Claudette Colbert: Lower Right, Susan Hayward.



technical excellence. Such work is the product of years of experiece, intense enthusiasm for the job at hand, and the ability and personality to overcome the problems entirely outside the field of photography that beset the studio stillman in every day's work.

The amazing paradox of studio stillmen is that their entire job is devoted to the creation of personal publicity for studio talent, but they themselves seldom sample the benefits of their own vocation. Certainly, studio stillmen are as desirous as any other professional workers to receive the credit and publicity for their endeavors that is an essential element of progress in any profession, whether from the standpoint of prestige and or of financial improvement.

Factors that militate against such personal publicity are the hustle and bustle of studio activity under mass production methods and the innate hesitancy of most serious professional photographer to ex-

ploit themselves personally.

Nevertheless, and in spite of the problems involved, there can be little doubt that top still photographers are entitled to more credit, more opportunity to have their work stamped with their signature when it is presented for public attention. The least that could be done would be for studio publicity departments to give a bit more attention to crediting the creators of worthwhile still photography and for magazine and syndicate editors to give an equal attention to credit lines for photographic art from the studios, as they do to their staff men and the syndicates that supply spot news pictures.

You can cull over the month's magazines and dramatic pages and find hundreds of examples of outstanding photographic art from the picture industry. You'll find the percentage that is credited very small. Of course there is no deliberate intent to slight the studio still photographer. Many editors would be pleased to give credit if the information was properly supplied with cap-

tion material.

It's a situation where a little friendly cooperation would go a long way toward giving a neglected group a little well-deserved credit. And as studio stillmen emerge from their anonymous standing, we might find that they have much that is interesting and worthwhile to contribute to the literature of photography. One has only to consider the motion picture industry's still art of the past 20 years to realize that there is a phase of photography well worthy of much further study and analysis.

Top: Leon Shamroy, veteran member of Local 659, IATSE, demonstrates the new Bardwell & Mc Alister Dinky Inkie to Alice Faye and Cliff Maupin, her favorite still photographer. Below: Maupin tries out the new midget lamp on sitting of Brenda Joyce. Note comparison with regulation baby spot. Shamroy currently is shooting "Little Old New York," starring Miss Faye at 20th Century-Fox.





THE dinky inkie

ew ultra-midget spot lamp ready for release to the trade by Bardwell & McAlister; meets demands for studio camramen for a really small, technically excellent lamp for close-ups and power in confined quarters; sells for \$15.

By MICKEY WHALEN

or ALL motion picture achievements, techcal or otherwise, have to be collosal or gantic to be important or worthwhile. rom Pete Smith's entertaining shorts and ickey's 15-minute antics to Bardwell & cAlister's new "Dinkie Inkie" lamp there e many opportunities for quality to come "small packages."

In the field of photographic lighting there cently has been an intensive interest in nall lamps for fill-in purposes, for greater exibility in modelling close-ups, to permit ceater freedom of action to the camera. hese smaller lamps are hung on the camera setups in various ways, thus maintaing the best lighting effects in moving shots. I close and confined quarters they allow amera and electrical crew to produce for act distinguishes Hollywood technique.

The principle qualities required for such amps are lightness and coolness combined ith optical correctness, full lighting efficiency and accurate control. In answer to

demand by many cameramen for smaller but first-class units using 100-150 watts, Bardwell & McAlister has been working on a new midget professional lamp, which now has been placed in regular production after many tests and experiments. It has been labelled appropriately the Dinky lnkie. As illustrated on page 10, the new B&McA lamps are really small and handy to use. The lamp itself is 5-inches high, and complete with cord and stand for attaching to tripod, etc., it weighs but 23/4 lbs. It has a special heat-proof Fresnel-type lens, which is optically correct to professional standards. It also features the patented B&McA instant focusing device, which has been described a number of times in International Photographer.

One of the big troubles of small lamps has been their tendency to get "red hot" after any considerable use. Much attention has been devoted to the Dinky Inkie's design so that the ventilating system is superefficient. It can burn for a long period without becoming uncomfortably hot and the lamp itself actually can be handled after hours of burning.

Although it uses 100- or 150-watt bulbs, because of its optical construction it still gives a powerful and satisfactory light that is subject to many variations of control. In addition to its use in motion pictures for fill-in or high power in limited space, it appears to have great possibilities as a new lighting tool for the still photographer. Cliff Maupin, 20th-Fox stillman member of Local 659, is the first of his craft to experiment with it for that purpose.

The Dinky Inkie is the combination of B&McA lamp engineering with the suggestions of a dozen or so studio cameramen. Idea first was tried at Warners where the camera department had several midget lamps made. B&McA combined other suggestions along the same lines and developed them for mass production.

Studio cameramen who have already had the opportunity to use the few models available for pre-sale experimentation include Leon Shamroy at 20th-Fox, Jack Marta at

OR THE RECORD: These most recent additions to the Academy esearch Council Electrical Characterist Standards are published

for the record for projectionist and soundmen readers. Lack of space prevented their appearance in last month's issue.

Academy Research Council

STANDARD ELECTRICAL CHARACTERISTIC

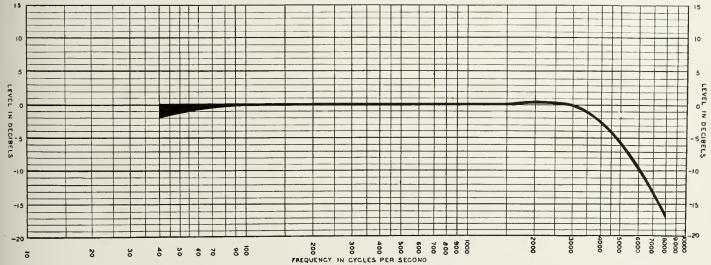
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Types A and B

International Projector Simplex Four-Star Systems

Type A — Using One LU-1000 (metal diaphragm) High-Frequency Unit and One LU-1004 Low-Frequency Mechanism Type B — Using Two LU-1000 (metal diaphragm) High-Frequency Units and Two LU-1004 Low-Frequency Mechanisms AUGUST 16, 1939

Electrical Run, Measured at the Output of the Power Amplifier with a Resistance equivalent to the Speaker Load Using the Academy Research Council Standard Multi-Frequency Test Reels (APFA-1, APFD-1, ASFA-1, or ASFD-1, Corrected), Altec Test Film (ED-20, Corrected), or RCA Test Film (Catalogue No. 26571)



For optimum results with current studio sound recordings, either system should be adjusted to this Standard Electrical Characteristic.

The tolerances of \pm 1 db up to 3000 cycles, increasing progressively with frequency to a maximum of \pm 2 db at 7000 cycles, should be rigidly maintained in adjusting equipment to these specifications.

Academy Research Council

STANDARD ELECTRICAL CHARACTERISTIC

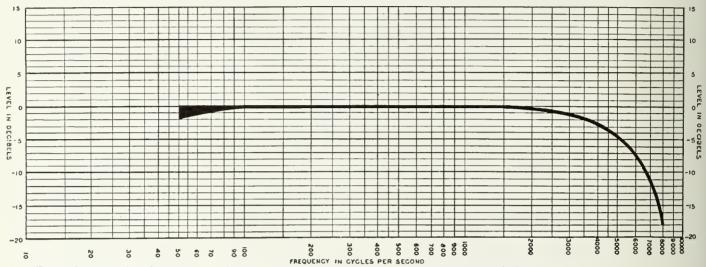
for

Type C

International Projector Simplex Four-Star Systems

Using Two LU-1011 (metal diaphragm) High-Frequency Units and Four LU-1010 Low-Frequency Mechanisms
AUGUST 16, 1939

Electrical Run, Measured at the Output of the Power Amplifier with a Resistance equivalent to the Speaker Load Using the Academy Research Council Standard Multi-Frequency Test Reels (APFA-1, APFD-1, ASFA-1, or ASFD-1, Corrected), Altec Test Film (ED-20, Corrected), or RCA Test Film (Catalogue No. 26571)



For optimum results with current studio sound recordings, the system should be adjusted to this Standard Electrical Characteristic. The tolerances of ± 1 db up to 3000 cycles, increasing progressively with frequency to a maximum of ± 2 db at 7000 cycles, should be rigidly maintained in adjusting equipment to these specifications.

Republic, Ray June and Bob Planck at MGM, Joseph Walker at Columbia and Gregg Toland at Samuel Goldwyn.

A few of the lamps have also been seen in the East, where "Bard" is on a swing through the key cities. Result of the Hollywood experiments and eastern viewings has the plant flooded with orders. The Dinky Inkie will retail for \$15 and will be available this month or early in December.

Metronome for Rhythm

• Successful use of a metronome in building rhythm, pace and tempo for big action scenes for "Northwest Passage," is an innovation by Director King Vidor at MGM. Vidor believes it marks first time the tempo

instrument has been employed in movie scenes. Plotting of scenes and rehearsals were done to this tempo on location for such scenes as portage of boats over a mountain, marches, boat rowing, the formation of human chain across the river, the sloshing through swamps and attack on an Indian village. Vidor believes there is great correlation between rhythm and dramatic action and results are said to be outstanding.

Remote Focus Control

• A new electrical remote control for changing focus was used for the first time on "New Moon" at MGM. The remote

control box can be operated by the operative crew from any portion of the sound stage. The device is a gear connected to the focusing mount and is controlled by a single knob on the control box, which contains the different focal distances.

Whalen Writes "Wails"

• Mickey Whalen, veteran member of Local 659, IATSE, has joined the staff of latse Facts, recently inaugurated official weekly IATSE newspaper for the West Coast Studio locals. In addition to covering news of the local union activities and personalities amongst the studio technicians in the studio locals, Mickey is writing an interesting column, "Wails by Whelan".

"REDECCA" location unusual

Shooting background plates from parallels built out over blnff 500 ft. above sea level; spectacular and beautiful scenery of Northern California coastline near Monterey photographed by Rod Tolmie, veteran member of Local 659.

DISTINCTLY OUT of the ordinary was the location jaunt made by a camera crew to the Monterey region on the coast of Northern California to secure background plates and atmosphere shots for Selznick International production, "Rebecca." It was necessary to match shots made in Europe on a location trip that had been stopped before completion by the outbreak of hostilities. Virtually the entire photographic

assignment was conducted from special parallels built out over the bluffs, 500 feet above sea level.

The accompanying pictures on Pages 14-15 by Rod Tolmie, veteran member of Local 659, IATSE, illustrate the pictorial charm of the location spot and the unique camera setups that were necessary to accomplish the desired matching with material already in hand.

Tolmie is an inveterate still hobbyist, and in between his duties as assistant on the production, he managed to secure some shots that are as interesting technically as they are news-worthy. All the shots are enlargements from Contax frames.

The camera crew took their lives in their hands many times during their work on the flimsy parallels high over the wind-swept cliffs. It was probably the first time such a perch has been constructed, but the effective material obtained for background plates was worth it.

Pictures 1, 2, 3, 4 and 7 in the accom-

HISTORY REPEATED

PLUS-X, Super-XX, and Background-X have established themselves firmly as the favorite raw films of the industry. In doing so they have repeated the history of Eastman films of other days. And they have done it through the same means: unmatched photographic quality, completely trustworthy uniformity. Eastman Kodak Company, Rochester, N. Y. (J. E. Brulatour, Inc., Distributors, Fort Lee, Chicago, Hollywood.)

EASTMAN

PLUS-X

for general studio use

SUPER-XX

for all difficult shots

BACKGROUND-X

for backgrounds and general exterior work



panying layout on Pages 14-15 illustrate the beautiful settings of the Monterey coast, while in Nos. 8, 9 and 10 are presented the

evidence of the unusual and dangerous parallels from which the crew did most of their work.

Archie Stout, a wood-carving hobbyist if there ever was one, was snapped while loafing between setups on the limb of a



ree in No. 5. Stout is seen with the baluce of the unit in No. 6. The veteran number of Local 659 is seated, with James

Higgins, assistant, behind him. and Ellis Carter, operator, at the camera. International Photographer wel-

comes similar layouts of interesting stills from location jaunts, for publication in future issues of the magazine.





. by Thomson

Stillmen in the independent field work against many problems that are never faced by the men who flash bulbs on the majo lots. Tightened budgets, speeded shooting schedules and other limitations cramp the companies that turn out state right features A veteran in this field, who always come through with interesting and effective ex ploitation stills is Lindsay Thomson, fa miliarly known as "Fat" to members o Local 659 and other workers in the inde pendent field. Accompanying shots indi cate that indie stillmen can venture success fully into artier aspects of photography i afforded opportunity, and in fact, many o the spectacular outdoor scenes that feature action pictures are being photographed more and more effectively by the stillmen in the field. Top sunset silhouette is from the still series on "Ride 'Em Cowboy, which features Dorothy Paige, NBC singer Lower shot is of Joan Barkley, featured player in "Lightning Carson Strikes." While such pictures seldom play delux houses, stills by Thomson and his co-work ers in the indie field are to be seen all ove the country in lobbies of smaller theatres

news of the month

otes of interest on studio technical developments, personalities, promotions, elections: SMPE officers, Tasker pped at Par, studio club winners, filter record use, novel sound stunts, Mitchell with Berndt-Maurer, free library.

ew SMPE Officers

Several new officers were elected at last month's all Convention of the Society of Motion Picture agineers in New York. A. S. Dickinson, SMPE nancial Vice-President, and J. Frank, Jr., Sectary, were returned for additional terms. D. E. yndman, of the Eastman Kodak Company, chairan of the Society's Atlantic Coast Section, was ected Engineering Vice-President. R. O. Strock, the Eastern Service Studios, was chosen Treaser.

asker Promoted

Promotion of Homer G. Tasker, chief producon mixer at Paramount for past two years, to sistant director of recording, is announced by oren L. Ryder, sound department head. Tasker as been instrumental in developing, with Ryder, new synchronizing device for sound and transtrency equipment which is being used for the st time on the forthcoming Edward H. Griffith oduction, "Safari," starring Madeleine Carroll and Douglas Fairbanks, Jr. Tasker was at Unireal Studio for four years as sound director. e resigned that position to come to Paramount 1937.

aramount Club Winners

First and second awards for excellence in poraiture at the Paramount Studio Club Camera roup salon last month went to Fred Warrington I the studio property shop. Bob Rogers, electician, won third and six places; William Grote, recision machinist, fourth place, and Bixby mith, head of studio insurance department, took fth and popular awards. Bud McQuoid of the rojection department, got first and fourth awards I Class "B", and Dorothy Welsh, retoucher, was ven second, third and popular votes. John Du loulin, payroll, got first and popular votes in lass "C." Lew Ami, "graduate" of the Camera roup, who now is operating his own studio, was lage.

0.000 Filters

Another Hollywood record is being hung up a Shirley Temple's new picture, Technicolor prouction of "The Blue Bird," at 20th-Fox, where is expected that at least 10,000 gelatine light lters will be used by the time the film is cometed. According to Ray Rennahan, Technicolor ameraman, "The Blue Bird" will make a wider se of color filters than any other color producton ever before filmed in Hollywood. Filters are sed to cast color on trees, backings, set detail. It. At twenty cents each for the gelatines, item or filters alone in the budget—exclusive of labor finstalling them in frames—will be \$2,000, Renahan says.

reepy "Canary" Score

Paramount's music and sound departments sed an effective new trick in sound recording or Bob llope-Paulette Goddard chiller, "The Cat and the Canary." The musical experts used six igh soprano voices and a vibraphone for the aderscore, and the music was picked up by a dicrophone placed in an open vault, a device hich scrambles all the sounds together and ives an eerie effect to match the mystery plot the picture.

To All Members of Local 659 and Readers of International Photographer:

Commencing with the December issue of *International Photographer*, Herbert Aller, business representative of Local 659, IATSE, publishers of the magazine, will assume the editorship of *International Photographer*.

Your present editor has resigned the post to devote full time to the editing of *latse Facts*, which recently commenced publication as the official weekly news medium of the West Coast Studio Locals of the IATSE & MPMO.

In bringing to a conclusion almost three years as editor of the publication, we wish to express our sincere appreciation for the cooperation extended by many officers and members of Local 659, the men in the publicity departments of the producing companies, executives of the manufacturing firms catering to the industry, and many members of the IATSE in other local unions in Hollywood who have contributed valuable material and art for publication.

We trust that International Photographer will continue successfully on its present path as an outstanding technical and photographic journal, representing the motion picture cameramen and their friends.—Gib.

The following communication by the new editor has been addressed to members of Local 659, IATSE, and the cooperation of all members unquestionably is assured for the furtherance of *International Photographer's* constructive policies:

"I have been appointed editor of the *International Photographer*. In assuming this position I am confident that my services can be most efficiently utilized if the different members of the organization who are so well qualified in the knowledge of motion pictures and art will work with me in this undertaking.

"An editor must surround himself with competent associates. It is to you that I will look for this support and encouragement.

"Therefore, I am imposing on you by asking you to be field representative on your lot for the *International Photographer*. Please stir up interest for stories, unusual layouts, pictorials and action shots of unusual interest. Suggestions and ideas will always be welcome.

"Be assured that you will have a say in the operation of the magazine.

"Please reply to this letter and tell me along what lines you intend to work and what you think would be the best program under which to conduct the magazine.

"Awaiting your reply, I am

"Sincerely and fraternally yours,

"HERBERT ALLER

"Business Representative."

Invisible Direction Aid

• Invisible sound transmitter, new device developed by the Warners sound department under direction of Major Nathan Levinson, is a boon for giving greater instructional freedom to di-rectors and aiding actors in their timing. Radio transmission is the basis of the new device. Sound of any sort may be sent into an off-scene microphone, from which it is conveyed to the brain of a player working in a scene via a tiny bone conductor next to his spine and under his clothing. Entire device, which consists of both conductor and receiver, is scarcely larger than a fist. It is being used for the first time on "Brother Rat and a Baby." It permits the transmission of inspirational music and stage directions without a record on the film sound track. Better timing in telephone and dictaphone conversations is also made possible.

Mitchell with Berndt-Maurer

• R. Fawn Mitchell is the new manager of Precision Film Laboratories, a wholly owned subsidiary of The Berndt-Maurer Corp. Mitchell was

manager of Andre Debrie Inc. of N. Y. for two years and before that, for 12½ years head of the technical service of Bell & Howell in Chicago. He has also been very active in activities of the SMPE, particularly on non-theatrical and laboratory committees, and is author of many technical writings dealing largely with the specialized problems of the 16mm field.

"Free Loan" Library

The Burton Holmes "Free Loan" library consists of a series of sound motion pictures which may be borrowed by recognized organizations without charge. The films have been produced for use by schools, colleges, churches, fraternal orders, clubs, CCC Camps, Army posts, Navy units, American Legion posts, Parent-Teacher associations, Youth Organizations, Women's clubs, Welfare associations, and Hospitals. The films are loaned free of charge; the borrower pays shipping charges both ways. They are restricted to free showings and will not be loaned where admission is charged. Most of the films are available on 16mm only, with a very few on 35mm.



EXPLOITATION STUNT print for Republic's latest "Zorro" thriller, is the result of adding the ad departments ideas to a striking action shot by Joe Walters. stillman member of Local 659, IATSE. Walters has been head of the still department at Republic for the past four years.

Spring Color Classes

● Enrollments are now open for the spring classes in color photography at the Hollywood High School. All members of the International Alliance West Coast Studio Locals who have had five or more years experience on black and white photography are eligible for admission. Stuart Barsby, Local 695, will conduct the class. The class is limited to eighty students so in order to take advantage of the free course it is suggested that those interested enroll now.

Graflex Time Payments

• Folmer Graflex Corporation announces that Graflex and Speed Graphic cameras are now available on time payments at Graflex dealers everywhere. The plan, now in effect nationally, is the outgrowth of a plan that has been in operation in selected areas for some time. Commercial Credit Company—one of the largest firms of its kind with offices serving all communities in the

country—will handle the financing. Down payments are as low as 20 per cent with twelve months to pay the balance and the full insurance of all equipment purchased on the plan against fire, theft or loss.

Progress on the Rinks

For production efficiency on Sonja Henie pictures at 20th Century-Fox, the boys in the machine shop figured out a mechanized ice scraper which has just been put into use on the ice rink which Sonja is using in "Everything Happens At Night." Up until now, ice was always scraped clean by men on skates wielding large, bulky scrapers. This consumed so much time during production that the boys decided to get together and bring technological progress to the ice rink. It was the safety razor that gave them the idea for the new contraption. It's merely a huge safety razor which is propelled around the rink by

means of wire ropes, pulleys and tackle operated by an electric motor on the sidelines. The motor can be run at any speed to pull the machine over the ice.

Union Housing Program

● Members of Local 659, and their friends in the IATSE who are planning to build a home should consult the skilled craftsmen of the Building Unions who do far more than just mixing mortar and laying tile when they build a home for you. As a group they are small home owners, themselves, and feel a responsibility to you that you receive the best. Full information about the Union Housing Plan can be obtained by writing 538 South Maple Ave., Los Angeles, Calif.

More Nostalgia

• William S. Hart, Tom Mix, Billy Anderson and the other buckaroos who roared to popularity with horse and six gun in silent days will be the composite character featured in the forthcoming 20th Century-Fox production, temporarily titled, "The End of the Trail." Darryl F. Zanuck hopes to do for the old time horse opera heroes the same as he did for the custard pie throwers in "Hollywood Cavalcade." The picture will be photographed in Technicolor.

Agfa Box Flash Cameras

• With introduction of two new Agfa "flash" cameras, amateurs can obtain an inexpensive camera with built-in synchronization and separate flash unit which is relatively inexpensive and yet simple to operate. The two new cameras are the B2 Shur-Flash and the A8 Cadet-Flash. Their flash unit is light and compact, providing a polished metal reflector on a light-weight plastic base. It uses two penlight-size batteries and can be fitted with any one of several types and sizes of standard photographic flashlamps.

The B2 Shur-Flash camera takes eight 2\(^4\x3\)\{4\}_1\)
inch pictures per roll of B2 film. The retail price of the Agfa B2 Shur-Flash is \$3.95, including flash unit but without lamps or batteries. The A8 Cadet-Flash takes eight 1\(^5\x2\)\{2\}_1\)inch pictures per roll of A8 film. Priced lower than the Shur-Flash, it nevertheless is a staunchly-built camera.

MGM's Elevator Camera

• A special "elevator camera" that can shoot scenes at any level from a tower fifty feet high has been designed by John Amold, camera department head, and Merrill Pye, art director, to be used for shooting dance routines by Fred Astaire and Eleanor Powell at MGM.

Juniors' 16mm Pix

• Headed by Jackie Cooper, Hollywood Junior Production Club, a private organization, will produce 16mm films, acted, directed, written and produced by its youthful members. The gift of a camera and projector shortly after he completed his co-starring role with Betty Field in Paramount's "Seventeen," gave Jackie the idea for making the amateur films. Plans are now being made for the first picture. Charter members of the Club include, Judy Garland, Bonita Granville, the La Motte twins, Freddie Bartholomew, Tommy Wonder and Sidney Miller.



CMERA CREW on "Music in My Heart," featuring Tony Martin and Andre Kosteletz of the Ethyl radio program, is captured here with director Joseph Santley, by Bill Tomas, stillman member of Local 659, IATSE. Joe Granucci, member of Local 80. TSE, is the grip at left. Reading upward in center are John Stumar, first cameramen, in Rosen, assistant, Lloyd Ahern, operative cameraman. Joseph Santley, the director, int the right.

SPE Annual Honors

Annual Progress Medal of the Society Motion Picture Engineers was awarded It month to Dr. Lloyd A. Jones of the Istman Kodak Laboratories in recognition of his contributions to motion picture thiology. At the same time, the Societs Journal Award for the outstanding per published in its Journal during the Jur was presented to Dr. Herbert T. Kaltis, President of the Technicolor Motion Isture Corporation.

Last year Dr. Kalmus was honored with SMPE Progress Medal for his technicolor motion picture achievements. He received this year's Journal Award for his paper entitled "Technicolor Adventures in Cinemaland." Dr. Jones, this year's recipient of the Progress Medal, was likewise awarded the Journal Award in 1935.

Both presentations were made at the banquet that climaxed fall convention of the Society in New York City.

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CLOSE-UPS

Allen M. Davey: veteran Technicolor photographer.

A CAMERAMAN who makes no bones about his 100 percent preference for color over black-and-white is Allen M. Davey, veteran member of Local 659, IATSE, who has been on the Technicolor staff continuously since 1937.

Davey in recent years has had the assignment of working with black-and-white cameramen in the program of the major companies and Technicolor to eventually have all industry cameramen familiar with the color systems, so that they may apply their own initiative to color.

As one of the Technicolor staff cameramen, Davey works beside the regular black-and-white photographers on the sets of color productions. His job is to permit the black-and-white photographer to use his familiar and personal technique of lighting and camera manipulation and to coordinate these factors to the technical demands and limitations imposed by color.

Davey is a veteran of black-and-white, having started in the business 25 years ago with David Horsley in the latter's lab, but his enthusiasm for color is based upon a sincere belief that color affords a much greater range of opportunities to the photographer.

With the vast improvement in realistic color rendering and greater depth of focus now available through the constant improvements being evolved by Technicolor's experts, motion picture color today is blossoming into a practical and useful tool, rather than an exploitation novelty.

With the pioneering era of color nearing a close, as many newer and even more radical improvements in technical excellence are foreseen for early introduction to the industry, Davey and other Technicolor staff men believe that there now will be a much keener interest in applying the finer elements of cinematic technique to productions in color. It's another version of the great improvement in entertainment quality and artistic values that took place when the camera was freed from the restrictions imposed by sound.

Today, Davey points out, it is possible to do anything in color that you can do in black-and-white. That goes throughout the gamut of camera tricks and special effects with very few exceptions.

Consequently, cameramen today are handling color with more confidence and all creative contributors are beginning to orient color in its proper place as an element of the entertainment whole, instead of an eye-smashing ballyhoo peg.

Current examples of feature productions



Allen M. Davey, Local 659, IATSE.

that illustrate this freedom of artistic expression in Technicolor are "Wizard of Oz," MGM, photographed by Hall Rosson; "Sweethearts," MGM, phootgraphed by Oliver Marsh; "Hollywood Cavalcade," 20th Century-Fox, photographed by Ernest Palmer; and "Typhoon," Paramount, photographed by William Mellor. On this quarter, Davey was the Technicolor advisor. He picks these films not because of his own association, but because they are productions with which he is most familiar.

Other pictures from major lots, photographed in Technicolor by ace camera-

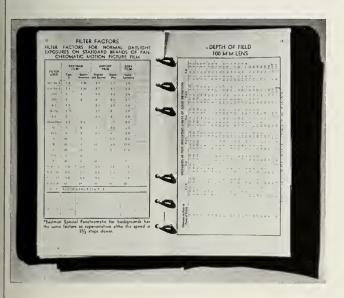
men with assistance of other experts fro the Technicolor corps, amongst the releas of recent months, also illustrate the tren

Davey's span of 25 years experience: the business jumps from a trip to Califo nia as a telegraph operator to sharir Academy award honors with Marsh of MGM's "Sweethearts" for 1938. Born Bayonne, N. J., and educated in the loc schools, he came to California without at thought of entering the picture busines but while a youngster he took a job in the free-and-easy "galloping tintype" factorias a carpenter. Like many another veters

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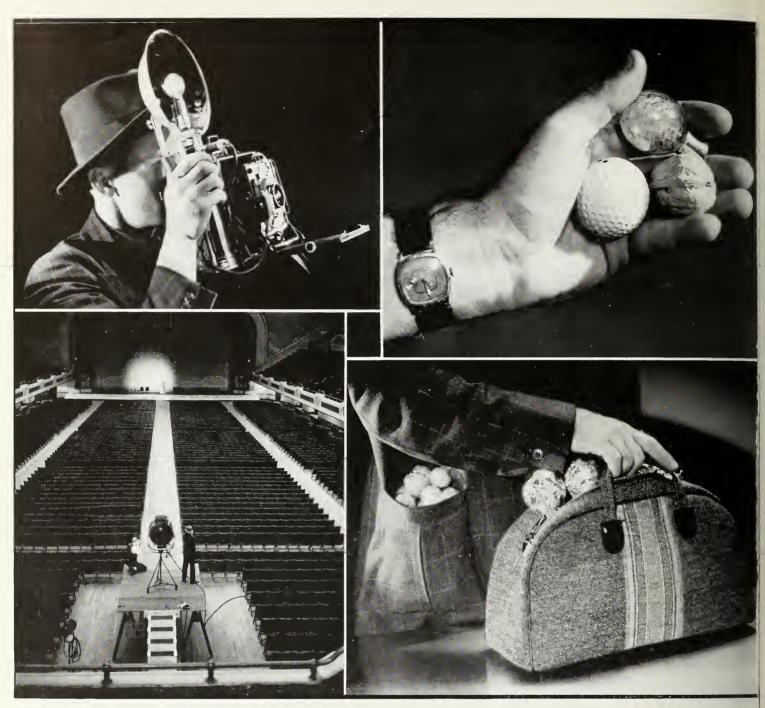
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Smallest flash bulb yet, new G-E No. 5, wire filled lamp with bayonet base, is shown at Top Left in camera, Top Right with a golf ball and walnut shell, and Lower Right, how two dozen can be carried in coat pocket. Interesting experiment as to midget

bulbs power is illustrated Lower Left in the Civic Auditorium Cleveland, Ohio. Shot was made with single midget bulb in a large spot-reflector, placed 265 ft. from man on stage. Camera that took pic was 315 feet from the stage.

he gravitated into the lab and as the business expanded found himself working as an assistant cameraman and eventually a first cameraman.

Among his first assignments were photographing the "Alkali Ike" comedies and features with Louise Glaum and Harry Edwards at Universal. In 1916 after a considerable stretch at the "Big U" he went with Famous Players-Lasky and photographed such silent stars as Louise Huff, Wallace Reid, Sesu Hayakawa and Myrtle Steadman.

He also worked for Triangle, before joining the service in 1917, back at his familiar clicking key as a radio operator in the U. S. Navy. After the World War he resumed photographic work at Realart, shooting Mary Miles Minter features in 1920 and then returned to Universal to stay until 1926. He free-lanced for a year or so and in 1927 became associated with the then new Technicolor, where he has been on the job ever since.

Smallest Practical Flash Bulb

② Development of world's smallest practical photoflash bulb, called "mighty midget" because of its effective flash, and designed for use with all cameras except focal-plane shutter types is announced by

General Electric's lamp department a Nela Park. Smaller than a golf ball, thi ingenious little wire-filled Mazda Photo flash Lamp No. 5, will be made available December 1st.

So small is the "mighty midget" tha more than two dozen can be carried in th pocket of a suit coat, more than three dozer in an overcoat pocket, or in a lady's hand bag. Wide range of pictures taken by it powerful flash have proved to be as sharp and clear as shots of the same subject taken with much larger flash lamps.

Besides being the world's smallest flasl bulb, new bulb is also a much more efficient producer of light for photoflash pho-

TRADEWINDS

Nws of new products: Smallest flash bulb yet, Agfa's Speedex camera, Eastman's Kodascope Eight, Bell & Howell Fady Rest case, dollar Braquette model, Art Reeves Line-O-Lite glow lamps, HCE Focal Plane Flash Synchronizer.

raphy. For its size, it gives more light learly a million lumens at peak of flash han any other photolamp commercially

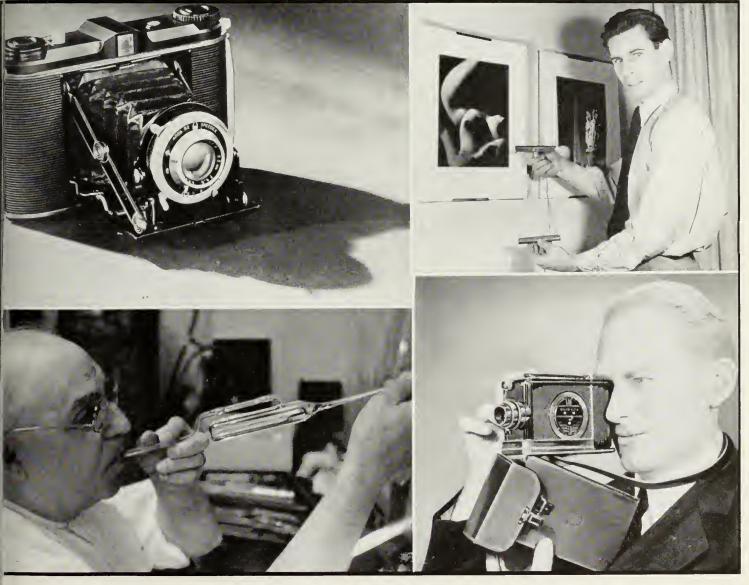
Unlike other flash bulbs which are nipped with the conventional type of ew base, new flash employs bayonete base, like the base of many a lamp of in automobile service. Designed for bid-fire loading and unloading in restor equipments, it locks the lamp firmly its socket.

Bulb of the new lamp is protected both

inside and out with a lacquer safety jacket. Outer jacket is intentionally tinted with a dye which in no way interferes with photographic effectiveness of light produced. Purpose of the dye is twofold: in factory, it permits inspectors to determine quickly and accurately whether lacquer protection has been properly applied: elsewhere yellowish hue serves as a quick means of identification, assuring both trade and public that bulb has been provided with an outer safety jacket as well as an inner one.

Essential technical data on the new mid-

get No. 5 lamp are as follows:



p Left: The new Agfa Speedex miniature camera, story on ge 23; Top Right, demonstrating the new dollar model Braette, flexible frame device for picture display, story on Page ; Lower Left: F. M. DeVoe of the Art Reeves staff, blows up

a Line-O-Lite glow tube bulb, story on Page 24: Lower Right: Demonstration of the new Bell & Howell "ready rest" case for Filmo 141 16mm cameras, story on Page 24.

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Agfa Speedex Camera

Latest Agfa Ansco contribution in the field of moderately priced hand cameras is new Agfa Speedex. Precision-built and 100 percent American-made, new Speedex is a compact instrument at low price of \$27.50. Speedex is fitted with an F.4.5 Anastigmat lens of 85mm focal length and a precision shutter with speeds of 1/2 to 1/250 second, as well as Time and Bulb exposures. Measuring 5\%\x3\%\x1\%\z1\%\cdot\end{a} inches in size (closed), the Speedex takes twelve 2\%\x2\%\x1\%\cdot\end{a} inches in size (closed), the Speedex takes twelve 2\%\x2\%\x1\%\cdot\end{a} inches in size (closed) from 3\%\cdot\end{a} feet to infinity is provided by adjustment of a focusing ring on lens mount. Shutter, which is of the pre-set type, is released by a button mounted in a convenient position on the body of the camera.

A feature of the Speedex is new-type, self-erecting platform and front which incorporates precision movement that brings the lens and shutter assembly quickly into a rigid, picture-taking position. A recessed tripod socket centrally located on the base of the camera, a single film window "peephole" positioned in the center of the camera back, built-in eyelets and a separate neckcord are all standard equipment. Special eveready leather carrying case, listing at \$4.75 is available.

New Kodascope Eight

• New Kodascope Eight, Model 70, announced from Rochester by Eastman Kodak Company, has the following outstanding features:

Die-cast construction, attractively finished in gun-metal gray, with chromium finished parts; One-inch f/1.6 Eastman-made projection lens, which with 500-watt lamp makes it possible to show pictures up to 39x52 inches on beaded or aluminum surfaced screens; Newly designed film gate, held open by catch during threading; Convenient threading knob; Positive three-position switch, controlling lamp, motor and cooling fan; Positive framing by knurled screw atop projector, so outline of picture on screen is not moved during framing; Rapid rewind, set in action by pull of a rewind lever. Automatic release of takeup drive during the operation. Rewinding done with lamp off; Speed adjustment knoh, which affords absolute control of the projector's motor speed; Easy tilting, over an unusually wide angle, by an easily-grasped adjustment knob on the projector base; Highly-efficient cooling system, including special cooling flanges, doublewall lamphouse, and powerful motor-driven fan; Removable lamphousing, given ready access to lamp, reflector, and condenser lenses; Accomnodation for 300-, 400- or 500-watt lamp, and lamp adjustment screw for obtaining maximum illumination; Convenient carrying handle, so located that the projector is properly balanced when lifted; Main bearings pre-lubricated; Sturdy, roomy carrying case, with space for projector, extra reel or two, extension cord, and emergency splicing outfit.

Kodascope Eight, Model 70 operates on either D.C. or A.C., 25- to 60-cycle, 100- to 125-volt electric lines. Price, including one 200-foot reel, extra belt, oiling and splicing outfits, and carrying case, but without lamp is \$68.50. Without case \$59.50. See illustration Page 23.

"Ready Rest" Case

• Bell & Howell announces new sheath case of patented design, radically different from ordinary type of cut-out case. New case for the Filmo 141 l6mm has the camera screwed to a tongue which is permanently attached to the case. When camera is placed in use body of the case forms a camera rest against the chest for greater steadiness in movie making. All camera controls remain visible throughout use. Also, loading of the magazine is accomplished with simplicity, and without having to detach any part of the case from the camera.



A close-up on the Art Reeves Line-O-Lite glow lamps, turned out at the modern Reeves plant in Hollywood.

Price is \$6. Further information may be had from Bell & Howell Company, 1801 Larchmon Avenue, Chicago, Illinois. Illustrated Page 23.

Reeves Line-O-Lite

• Technicians who are interested in local production of equipment should drop into Art Reeves establishment and have a loof at the efficient layout he has developed to turn out his glow lamps. The latest in glass-blowing and heat treatment to remove all impurities from the tubes is on tap, to turn out the Reeves Line-O-Lite glow lamps that are used the world over.

The Line-O-Lite is designed to overcome two deficiencies frequent in glow lamps. One is insufficient exposure on the film the other irregularity of glow line. By using a special glass translucent to Ultra Violet rays of the value of 3800 Angstron units, the first is eliminated. Sound film emulsion is most sensitive at 3800 Ang

som units (just below the limit of visibity, which is around 4000 Angstrom uts) so that the actinic emission of the Le-O-Lamp is 100 percent efficient.

The inherent frequency response characristic of this lamp makes suitable for with the most modern amplifying systems. Tests have shown the lamps response to be flat up to a frequency well above a lible limits, giving a range never before riched by a glow lamp.

Used in conjunction with the Ultra-Flelity Optical unit, the Line-O-Lamp exples the film at the most efficient fregency, making full use of its energy, threby obtaining full exposure at lower

vitages and currents.

The uniformity and sharpness of the low line is obtained by the exclusive shape the electrodes. Perfect control over the with of the glow line is achieved, greatly irreasing the efficiency of the lamp and eminating exposure from parasitic emis-

The Glow Tube is made out of a glass yich will pass the portion of the Ultra Volet Spectrum which is sensitive to recrding film. This entire tube is manufatured in the plant of Art Reeves, at 712 Santa Monica Blvd., Hollywood, Califrnia.

All the metals and parts of the tube are cased before manufactured. During the imping of and filling of tube with rare uses it is bombarded electrically. The archine used for bombarding has 35,000 downwards of radio frequencies. This heats the elements of the tube to a white heat dremoves all the impurities. And due the fact that the tube is a vacuum the estals do not disintegrate.

The tube is then filled with rare gases d tested with an amplifier before being aled up with a pump. In this manner the bes can be tested and made to any imdence desired. The tube will never ange the impedence because there are no

purities left in the tube.

raquette Dollar Model

Manufacturers of Braquettes now have a \$1.00 del on the market. Identical in most respects th the rigid \$2.00 model, this "cord" type aquette is especially compact and offers the solute maximum in adjustment. (See illustram Page 23). It will frame any picture from e inch high to a picture or photo mural 36 bles high, and all sizes between, such as 8x10, x14, 16x20, etc. The Braquette idea is—you me your own pictures, changing them as often you like, the frame will always hold them redless of size. With these new Braquettes, you n take out the old picture, reframe a new one, d get it up on the wall in a minute. Braquettes e available in four Lumilite colors, the standd polished aluminum, jet black, red, and gold ish; at all photographic stores.

gfa Reflector Kit

For making snapshots at night indoors with otographic flash or flood lamps, a new, inexnsive Agfa Reflector Kit now is available at otographic dealers. The two folding reflectors eluded in the kit are made of a heavy, durable rd stock having especially good color and rection characteristics for photographic use, inted on side panels of each reflector are full

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Here is a close-up of the new Hollywood Camera Exchange Focal Plane Flash Synchronizer, just put on the market. Note that installation is so arranged that only visible parts are battery case.

cord and reflector. See story on Page 26. At right, Bill Salm head of the HCE repair and tehenical department, displays ho the new attachment appears in actual use.

directions for use, including exposure recommendations and suggested lighting arrangements. Kit also includes two Metal Adapter Rings for fitting reflectors to standard home lighting fixtures, handy ten-foot Folding Rule that eliminates need for guessing distances, and a convenient Exposure Calculator. Exposure Calculator is of the "sliderule" type and quickly indicates suggested lens and shutter settings for cameras loaded with Superpan Press or Superpan Supreme films, and for a wide range of lighting conditions.

Agfa Xmas Card Outfit

For photographers planning to make photographic Christmas Cards this season there is now available a new Agfa outfit which greatly simplifies work involved in preparing and printing the combination negative. New outfit provides six 5x7-inch masks made on Reprolith film, which carry the dsign and message of the card. Each mask also has a 2x3-inch rectangle of clear film appropriately located for the printing of a personal snapshot negative. Guides are provided on each mask to simplify centering of standard $4\frac{1}{4}x5\frac{1}{2}$ -inch greeting card stock, and full instructions are included for use of the masks and

for imprinting personal signatures. Special attention has been given to construction of masks to insure good contact with the paper, and in the design to provide a pleasing relationship between picture area and ornamental decoration. The Agfa Greeting Card Outfit is available at photographic dealers at \$1.69. Special deckled-edge photographic paper in the 41/4x51/2-inch size of Agfa Cykon Kashmir White has been made available at the regular price of 45c per 2-dozen package, \$1.10 per ½ gross, \$2.00 per gross. Agfa Cykon Crystal is also being supplied for greeting card use with deckled edge in 41/4 x51/2-inch size at the regular price of 50c per 2-dozen package, \$1.20 per ½ gross, \$2.20 per gross. To simplify problem of obtaining suitable and attractive envelopes of proper size, special envelopes have also been prepared in a heavy, cream-white vellum stock at 20c for 25, 75c for 100, \$2.65 for 500.

HCE Focal Plane Flash

• With the improvement in quality and broadening of the flash peak by manufacturers of flash bulbs, focal plane synchronization for ultraspeed action shots now is possible with the Graflex and Speed Graphic press cameras, and equip-

ment manufacturers are meeting the demand wi dependable accessories for this purpose.

Newest focal plane synchronization device the market comes from Hollywood. Hollywo Camera Exchange, well-known throughout that for its HCE Combination Lens Shade at Filter Holder, now is introducing the new HC Synchronizer, an accurate and dependable devithat has the added virtue of being built into the camera so that only battery case, cord and if flector are visible, as illustrated on Page 26.

A lens shutter is not required. With the upon the New HCE Focal Plane Flash Synchronize uniform exposure with no hot spots or fadeous guaranteed. Flashes from 1/100th to 1/1000 of a second are obtainable with this synchronize

Simplicity of design is such that the only visil parts are the battery case, cord, and reflect The heart of the synchronizing unit is so constructed within the camera that it is impossiful for it to get out of adjustment, thus providing perfect focal plane flash synchronization at times. This new feature adapted to the Graff and Speed Graphic camera broadens the ran of the camera in covering sports and action ever wherever high speed synchronization is required. Price complete with sturdy battery case and affector, \$25.

Sort End Sales

Miniature Film Supply Co., 130 West 46th eet, New York City, has opened offices to sup-35mm short ends of all makes and also redded film cartridges for Leica, Contax and other miature cameras. Harold Rosen is in charge the department.

lew Master Leicameter

New Weston Master Exposure Meter has cread much comment because of the new and adnageous features, such as readable high sensitity, new increased brightness range, streamlined actional design, and "High Illumination" and "Illumination" scales to simplify the photophic process as much as possible, instead of direct scale giving readings in candles per uare foot, Leicameter readings are in direct after speeds.

"High Illumination" scale of the Master Leicater gives direct shutter speed readings from 2 second to 1/1000 second. The reading is sed on a film speed of Weston 24 (the speed the usual medium speed type of film employed general outdoor photography) and a diaragm opening of f:6.3. In the "Low Illuminan" scale, the film speed of Weston 50 has en chosen, since films of this speed are genery employed for indoor photography, and the ales are based on the use of a diaphragm openzo of f:2.

A calculator dial indicates the diaphragm stop use when film speeds other than those on which e scales are based are used. Calculator dial o can be used to determine shutter speeds to used at various diaphragm openings, for any

rticular reading.

When the "High Illumination" scale is used ere is a "cell baffle" over the lens of the meter, nencountering poor lighting conditions, where is necessary to use the "Low Illumination" ale, a small latch is released, enabling the "cell ffle" to be swung out of the way. This action tomatically places the "Low Illumination" scale to position. The Master Leicameter has all of e Weston features and can be differentiated by orange band on the face of its calculator dial.

ew Graphic—Graflex Tome

"Graphic Graflex Photography," a new book Willard D. Morgan and Henry M. Lester—is heduled to go on sale January 2, 1940. Deribed as the most complete and authentic book er written on the subject, it is expected to find ady acceptance by owners of all types of phographic equipment. While directed toward raflex and Speed Graphic cameras, it is so writn as to be of value to all who strive for better ctures.

According to Folmer Graflex Corporation, book esents for the first time complete in one volume ticles dealing with practically every phase of notography possible with these cameras from dinary snap-shot work to such highly specialized lds as press work and microphotography. Portits, scenics, pictorial studies, flash photography d many other subjects are covered by authors to are specialists in their fields.

Graflex dealers now have on sale, for use durg the holiday season, gift certificates which may exchanged for copies of the book after Janu-

v 2

yrd Takes 7 Graflexes

When Commander Richard E. Byrd shoves off r the Antarctic, seven Graflex American-made meras will go with him. Of these, four were cently purchased especially for this newest exdition, while three others were factory reondind for this third trip "down under." Among e cameras for still photography assignment on trip are six 4x5 Speed Graphics and one 4x5 volving Back Graflex. The new Speed Graphics completely equipped with coupled range finds and photoflash synchronizers.



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There are only a few hundred copies left of the first edition of this practical photographic handbook, in which Hooper for the first time makes available to the photographic student the famed "Navy style" method of instruction. A graduate of the Naval School of Photography, Pensacola, Florida, Hooper has combined the fruits of such training with the experience of commercial photography and research and teaching in the Los Angeles public schools. If you read the Chapter on Photographic Physics which was presented in the March, April and May issues of International Photographer, you will understand the practical value of this work. Teachers and those requiring a handy reference volume on the basic fundamentals of photography will find it an invaluable addition to their libraries.

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PHIENTS

By ROBERT W. FULWIDER

Last month the following patents of interest to readers of International Pho-TOGRAPHER were issued by the U. S. Patent Office. These selections and brief descriptions of new patents were prepared by Robert W. Fulwider, well-known Los Angeles attorney, specializing in patent and trade mark counsel.

No. 2,174,529—Photographic Apparatus. Barton Allen Proctor, assignor to Kinatome Patents Corp. Original application April 30, 1927, now Patent No. 1,944,033, dated Jan. 16, 1934. Divided and this application Jan. 6, 1934. 11 claims.

A motion picture camera of a size to be held in the hand, and divided by an internal web member into a motor compartment and a film compartment.

No. 2,174,766—Means for Producing Stereo-SCOPIC PHOTOGRAPHIC EFFECTS. Ivan Melville Terwilliger, Altadena, Calif. Application Dec. 12, 1932. Renewed Apr. 15, 1938. 2 claims.

A camera arranged to take two exposures in succession, one through the lens alone, and the other through the lens and a parallel faced refractor set at an angle to the lens.

No. 2,174,931—METHOD AND APPARATUS FOR THE PRODUCTION OF MOTION PICTURE FILMS OF THE ANIMATED CARTOON TYPE. Paul Houlton Terry, Larchmont, and Carl Louis Gregory, New Rochelle, N. Y.; said Gregory assignor to said Terry. Application June 18, 1936. 21 claims. A method of adapting background projection to the making of animated cartoons.

No. 2,175,836—Color Sensitive Photographic PLATE AND METHOD OF PRODUCING SAME. Joseph S. Friedman, Brooklyn, and Arthur Bruck, N. Y., assignors to Color Processes, Inc., N. Y. Application Mar. 11, 1937. 4 claims.

A method of producing a multi-color sensitive film by selectively dyeing the outer surface and body of the emulsion with different color sensitizing dyes.

No. 2,176,303—Sound Track on Colored Film AND METHOD OF PRODUCING SAME. Charles F. Jones, Burlingame, Calif., assignor of one-fourth to C. W. Durbrow, both of San Fran-cisco. Application Mar. 2, 1936. 7 claims.

A sound track on a multi-layer color film produced by printing the track in one layer only, exposing the other layers, and then reversing the sound track.

No. 2,177,257—COLORED PHOTOGRAPHIC PICTURES. Lothar Jakob and Bruno Wendt, Germany, assignors to Agfa Ansco Corp. Application Mar. 24, 1938. In Germany Apr. 9, 1937. 5 claims. A process of producing colored pictures in which the silver halide image is treated with a compound selected from the group consisting of an amine capable of being diazotized and an antidiazotate thereof.

No. 2,177,342—METHOD OF COLOR PHOTOGRAPHY. Edwin Bower Hesser and Eva Louise V. Hesser, assignors to Photocolor Corp. of America. Application July 2, 1937. 5 claims.

A method of producing color pictures by exposing two areas of a film having one layer sensitive to blue and green, and a second layer sensitive to red, one area being exposed through a yellow filter to provide the green and red images, and the other area bing exposed without the yellow filter.

N. 2,177,417—Photographic Printing on Len-TICULAR FILMS-John Eggert and Gerd Heymer, Germany, assignors to I. G. Farbenindustric Aktiengesellschaft, Germany. Application Nov. 26, 1935. In Germany Nov. 27, 1934. 5 claims. A method of printing stereoscopic component pictures on a light-sensitive lenticular film.

No. 2.177.632—Production of Colored Pictures. Ernst Bauer, Germany, assignor to Agfa Ansco Corp. Application Aug. 5, 1936. In Germany Aug. 17, 1935. 2 claims.

A multi-emulsion color film having a red and blue picture emulsions with color formers fast to diffusion, and a third emulsion having a substantive azo-dye component.

No. 2,177,706—APPARATUS FOR PROCESSING MOTION PICTURE FILM. Fred W. Gage, Beverly Hills, Calif., assignor to Warner Bros. Pictures, Inc. Application May 31, 1938. 11 claims.

Film treating apparatus having a large reservoir tank connected to a film treating tank in which the film is processed by jets of film treating liquid. No. 2,177,708—FILM PROCESSING APPARATUS. Fred

W. Gage, Beverly Hills, Calif., assignor to War-

ner Bros. Pictures, Inc. Application July 1938. 11 claims.

Film treating apparatus having a series of tan through which film may be run in one directi while the film treating solution is run throu the tanks in the opposite direction.

No. 2,177,737—Photographic Apparatus. Hard L. Mohr and Albert W. Tondreau, Hollywoo Calif., assignors to Warner Bros. Pictures, Is Application Nov. 13, 1936. 7 claims.

A camera objective designed to be tilted abo its nodal point of emergence.

No. 2,178,145-Motion Picture Camera. Roy Manly, Birmingham, Ala. Application Feb. 1938. 1 claim.

A camera making use of a beam-splitter whi has a polarizing semi-reflecting mirror and crossed polarizer for cuting off the light reflect from the rear surface of said mirror.

N. 2,178,450—Developing Photographic Fil AND PLATES. Alphons O. Jaeger and Joseph Jewett, assignors to American Cyanamid Chemical Corp. Application Apr. 6, 1938. claims.

A method of developing photographic emulsion by using a developer containing not more th 0.25% of a salt of an ester of an aliphatic s fodicarboxylic acid.

STATEMENT OF THE OWNERSHIP, MANAGEMENT, CIRCULATION, ETC., REQUIRED BY THE ACTS OF CONGRESS OF AUGUST 24, 1912, AND MARCH 3, 1933

Of International Photographer, published monthly at Los Angeles for October, 1939. State of California County of Los Angeles \ ss.

Before me, a Notary Public, in and for the State and County aforesaid, personally appeared Edward II. Gibbons, who, having been duly sworn according to law, deposes and says that he is the Editor of the International Photographer, and that the following is, to the best of his knowledge and belief, a true statement of the owner, management and if a daily paper, the circulation), etc., of the aforesaid publication for the date shown in the above caption, required by the Act of August 24, 1912, as amended by the Act of March 3, 1933, embodied in section 537, Postal Laws and Regulations, printed on the reverse of this form, to-wit:

1. That the names and addresses of the publisher, editor, managing editor, and business

Publisher, International Photographer, Los Angeles, California. Editor, Edward H. Gibbons, Los Angeles, California. Managing Editor, Herbert H. Aller, Los Angeles, California. Business Manager, Helen Boyce, Los Angeles, California.

2. That the owner is; (If owned by a corporation, its name and address must be stated and also immediately thereunder the names and address of stockholders owning or holding one per cent or more of total amount of stock. If not owned by a corporation, the names and address of the individual owners must be given. If owned by a firm, company, or other unincorporated concern, its name and address, as well as those of each individual member, must be given.) International Photographers, Local 659, International Alliance of Theatrical Stage Employes and Moving Picture Machine Operators of the United States and Canada, 6461 Sunset Blvd., Hollywood, California. President, Hal Mohr; Vice-President, Leon Shamroy; Secretary-Treasurer, E. S. Depew; Recording Secretary, James V. King; Sergeant-at-Arms, Len Powers.

3. That the known bondholders, mortgagees, and other security holders owning or holding I per cent or more of total amount of bonds, mortgages, or other securities are: (If there are

4. That the two paragraphs next above, giving the names of the owners, stockholders, and security holders, if any, contain not only the list of stockholders and security holders as they appear upon the books of the company but also, in cases where the stockholder or security holder appears upon the books of the company as trustee or in any other fiduciary relation, the name of the person or corporation for whom such trustee is acting, is given; also that the said two paragraphs contain statements embracing affiant's full knowledge and belief as to the circumstances and conditions under which stockholders and security holders who do not appear upon the books of the company as trustees, hold stock and securities in a capacity other than that of a bona fide owner; and this affiant has no reason to believe that any other person, association, or corporation has any interest direct or indirect in the said stock, bonds, or other securities than as so stated by him.

That the average number of copies of each issue of this publication sold or distributed, through the mails or otherwise, to paid subscribers during the twelve months preceding the date shown above is. (This information is required from daily publications only.)

EDWARD H. GIBBONS, Editor

(Signature of editor, publisher, business manager, or owner.)

Sworn to and subscribed before me this 12th day of October, 1939.

MILTON A. TAYLOR, Notary Public (My commission expires August 7, 1941)

(Seal)

THE CAMERA DEMANDS

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International photographer

Vol. 11

December, 1939

No. 11

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On the Cover

Meet Walt Disney's newest star—little Pinocchio himself! The engaging little puppet, endowed with life through the magic of Walt and his staff, is the hero of the second full-length production to issue from the Disney plant. Other scenes from "Pinocchio" are shown on page 8.

litor, Herbert Aller; Art Editor, John Corydon Hill: Business Manager. Helen Boyce.

ntributing Editors: Lewis W. Physioc, Fred Westerberg, D. K. Allison, George Hurrell, J. N. A. Hawkins, Paul R. Cramer, William Comyns, G. M. Haines. pyright, 1939, by Local 659, International Alliance of Theatrical Stage Employees and Moving Picture Machine Operators of the United States and Canada.

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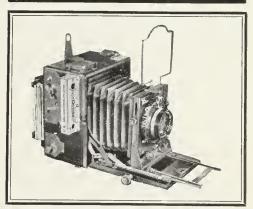
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multiplane camera for "pinocchio"

Walt Disney technicians create multiplane camera for third dimensions effects that add realistic quality to animated motion pictures produced by the famed studios.

Audiences that have marvelled at the illusion of third dimension and depth in the Walt Disney productions will notice marked improvements in this technique in Walt Disney's second full-length feature. "Pinocchio."

Two factors are responsible for this increased illusion of depth. One is the development of the paint technique on the celluloids known as the "blend." This process gives a molded round appearance to the bodies, arms, and legs of the characters, with highlights and rounded contours on the face.

The second and important factor is the multiplane camera. Awe-inspiring in its complexity, bulky and incredibly precise, this multiplane camera, designed and executed by the Disney technicians, gives animated motion pictures a realism and vitality never before possible.

The chief thing the camera does is to achieve the screen effect of depth and a modelled quality in the drawings of the characters. Under the old technique, in which the animated characters moved across a background in the same plane, it was not possible to give the illusion of real-life movement. The characters were drawn upon a single or several tightly superimposed sheets of celluloid and shot as a single, flat subject, over a background. The artist was relied upon to suggest perspective.

The multiplane camera is mounted to shoot downward, with the lens above the horizontally placed drawings. The construction of the machine facilitates the breaking up of the subject matter into component parts, on the basis of their respective distances from the eyes of the observer. Figures are painted on the regulation celluloid sheets, while the backgrounds are executed on a special type plate glass. These are photographed simultaneously on the various levels. This may be from two to seven planes-depending upon the character of the scenes to be photographed. This photographic process enables the action of the characters to be filmed at a distance as great as 12 feet from the backgrounds.

The multiplane camera is of infinite accuracy. Each plane may be lighted

separately, moved separately or jointly. closer to or farther away from the shooting lens, or at different speeds. A master control panel controls hairline adjustments of light levels, and the interlocking of the camera with the various background and contact levels. The various planes permit a truer perspective to be achieved as the camera dollies to or away from the key plane.

Operation of the multiplane camera is complex, requires a detailed control sheet and a special periscope finder with which the operator can check before shooting the picture. A day's work with the standard or single-plane camera nets about 50 fcet of film, while the multiplane camera, functioning at par, nets approximately 10 feet of film in the same number of working hours.

Three men compose the staff for operation of the single-plane camera, while the services of from two to four times as many are required to operate the multiplane camera. For operation of the single-plane camera one man is used to focus and shoot, one to stage the successive pictures for the lens the third man to follow script and check operation of the second man. Operation of the multiplane camera requires this staff plus two men for each plane, since the latter two operations must be duplicated for each level.

Introduced as an experiment, first use of the multiplane camera was in the short production, "The Old Mill." The process reached a high degree of success in Disney's first feature production, "Snow White and the Seven Dwarfs."

Convinced of the superiority of the multiplane camera and that it is a great forward step in the improvement of animated motion picture technique, the Disney technicians are engaged in extensive experiments with the multiplane technique whereby they hope not only to increase the amount of film footage shot per day, but to lower the cost attendant with multiplane photography. These two factors will permit the greater use of the multiplane technique in all future productions.

In the new studio which Disney has erected in Burbank, three multiplane

cameras will be installed, each with its camera room and replete with the latest improvements, devices and equipment.

Dust, dirt and lint—the bugbear of the camera department—will be almost non-existent in the camera building of the new quarters. This result is to be achieved by a device whereby anyone entering the camera room is automatically treated to specially routed air blasts guaranteed to remove all dust and lint from the clothes.

Disney maintains a complete staff of engineers who are usually experimenting with new developments in the realm of the camera. In the two years since "Snow White," many improvements have been made on the multiplane camera. Lighting of the various levels has been increased: technical obstacles overcome which permit the trucking on a scene and the making of panorama shots.

The scene in "Pinocchio" which introduces to the audience the eerie waterfront where the Red Lobster Inn is located, is made possible through the advances in multiplane camera technique.

The camera trucks past buildings into a misty, heavy fog, through which the Inn can be faintly seen. The camera continues through the fog up to the door of the Inn. Then, without being conscious of a break the audiences finds itself inside the door, and accompanies the camera down the steps inside, to a table where sit the Fox the Cat and the Coachman, plotting to send the puppet Pinocchio to Pleasure Island where bad little boys are turned into donkeys.

As many as nine celluloid levels were used at one time in shooting the interior of the lnn.

The scenc, occuping 16 seconds on the screen, is approximately 23 feet in length and took a crew of five men 46 consecutive hours to film it, one crew relieving another.

The Disney cameramen and technician will tell you that the only limitations im posed upon animated motion pictures are the limitations of the functions of the camera. They consider it their problem and that it is up to them to develop the cameras and techniques so that any ide from the fertile imaginations of the artist may be interpreted and handled by them



©Walt Disney Productions

The Disney magic has been applied again to create his second full-length production and to bring to the screen the quaint character of Pinocchio. The little puppet who is well known in the pages of juvenile fiction is the central figure in one of the strangest and most engaging families ever gathered under one roof. At top left is seen the old woodcarver Geppetto, putting the finishing touches on our hero. Kibitzing are Geppetto's pets. Cleo the goldfish and Figaro the kitten, who are endowed by Disney with human manners and intelligence. Pinocchio and his pals—the impish kitten, the flirtatious goldfish, and the merry vagabond cricket, are seen again at top right. Brought to life in order to grant the kindly old man's wish for a son, Pinocchio is given an official conscience in the person of Jiminy Cricket, who seems to be creating a surprise in the lower left photo. The good Blue Fairy (lower right) brings the puppet to life with her magic wand. RKO Radio are releasing this Walt Disney production.

ioliday poster art

Stillmen put holidays to good publicity use with timely shots of studio players in gags appropriate to the event, for poster art of the nation.

IRISTMAS AND NEW YEAR are old as the ls but stillmen exercise their talents, shown by the interesting examples on to following page, in presenting Holiday ason art in new dress, or undress, as to case may be.

The two pictures at top are by Robert thee, of Paramount, veteran stillman mber of Local 659, IATSE. The little

gal with the big snowman is Susanna Foster, 14-year-old singing prodigy. Santa Claus assures himself a rousing welcome when accompanied by an assistant like Virginia Dale, with her bag of tricks.

Richee was responsible also for the calendar shot of Muriel Angus, the Paramount English actress. Eric Carpenter, another veteran member of Local 659, shot the action photo of June Preisser.

MGM, leaping into leap year over the old year hurdle.

"Poster art" the boys call it and it is seen throughout the nation as part of the buildup for screen fame. After Christmas and New Year's come St. Valentine's, Easter, Fourth of July. and so on—just another holiday for most people but for the stillman another opportunity to do his stuff.



Echoing the sentiments expressed by these pictures, *International Photographer* extends to its readers and to all members of Local 659 its sincere wishes for a "Merry Christmas and a Happy New Year." We hope Mr. S. Claus

will be looking your way and that he (or his helper) will leave a sackful of good things at your home. May you take 1940 in stride, starting with the first day of the New Year. For details on this poster see Page 5.



Westerns are riding high at the box office again, thanks to Gene Autry, Public Cowboy Number One. (See following pages.)

WESTERNS CARRY THE business

Gene Autry, Republic star, heads the fast riding trend back to the old faithful Westerns, now enjoying high favor with Mr. and Mrs. America, as is demonstrated decisively where it counts most—the box office.

RIP ROARIN'. blood and thunder he-man Westerns are back in the saddle again. carrying the business for many a box office and studio treasury while the more conventional fare that has been dished out for lo these many years continues to find tough sledding.

One proof of the hold Westerns have on the ticket buying populace is the astonishing fact that Gene Autry, Number One cowboy in the field, also is first in the amount of fan mail received by any Hollywood actor.

The Republic star, by the way, gives a heaping measure of credit for his success to the cooperation extended him by the still cameramen with whom he has worked. With much of the publicity built on tie-ups, stillmen, with their careful planning and painstaking execution, have been a big factor in the exploitation of the genial cowboy.

Autry hails from Texas and hit Hollywood via the medicine show trail and radio. He was nabbed from the WLS Barn Dance program, in Chicago, where his guitar and singing voice had made him a headliner.

The stills on the facing page indicate the many appeals by which his popularity has been built up and maintained. In addition to the hard riding and virile action that would be expected of any screen cowboy, Gene packs an extra box office wallop with his musical ability. The singing cowboy star has a spectacular auto trailer in which to transport his mount. Fast on the draw, he also is sure to beat the other guy to the punch. Throw in a

little heart throb and it all adds up to box office success.

But Autry and Republic are not the only ones cashing in or getting ready to cash in on the new bonanza.

Universal has teamed Marlene Dietricl and James Stewart in a fast moving feature: "Destry Rides Again." Hal Mohr' photography is outstanding in this production, a number of stills from which wer shown in the October issue of INTERNATIONAL PHOTOGRAPHER.

Warner Brothers are doing "Virginic City" and Sam Goldwyn is producer o "The Westerner," starring Gary Cooper.

From the cameraman's standpoint it i colorful, action stuff. "Hi-yo Silver Let's go, Westerns! Thar's gold in ther thar box office tills."

THE EYES OF THE ARMY

Modern warfare depends increasingly upon the aerial camera, as this article points out in a timely summary of the photographer's part in current military strategy.

By COLONEL GRANT H. STONE, A.A.R.

(Opinions expressed herein are those of the writer and are not to be construed as being official representations of the U. S. Army Air Corps.)

Photography, because of the steady improvements in camera construction, because of the production of faster, more sensitive films, and because of its ever increasing importance in military and civil aeronautics, has come more to the attention of the general public in the few years just past than ever before. From the time that the box camera was perfected, near the turn of the century, to the present day of the "candid camera," photographs have become increasingly important to man and to Mars.

To this end, the United States Army, Navy, and Marine Corps have developed and proved that it is far more advisable to fight wars with the aid of the aerial camera than with men and steel alone.

Modern military strategy depends on securing accurate information pertaining to the enemy's position, without loss of time. The enemy is constantly removing their heavy artillery into newer camouflaged position. Rapid mobile units set up new positions many miles distant in a single night. All of these changes must be known during the heat of battle, therefore it is up to the aerial photographer to record these shifts in the shortest pos-

The Author

Colonel Grant II. Stone, formerly of the First Pursuit Group, U. S. Army Air Corps, has been behind the camera for twenty years. He predicts that IATSE members will be the backbone of the einema photo sections of our defense forces in the event of war. Col. Stone is the California head of the American Air Reserve, which is the aviation division of the Military Order of Guards. This unit is not connected with the U. S. Army but it is a military organization operating under national laws with stipulated authority from the Secretary of War, as granted February 17, 1922, and as covered by the National Defense Act, Sec. 125, passed by Act of Congress June 3, 1916. For details of training available write to the American Air Reserve, P. O. Box 1070, Hollywood.

sible time so that our army may likewise set up defensive placements.

Some aerial cameras are designed specifically for oblique photography at long range or from high altitudes others for making obliques in rapid succession, others for vertical mapping photographs only, and still others for both mapping and oblique photographs. Automatic semi-automatic and manually operated mapping instruments are used on models

which automatically record each negative with such data as altitude, date, time serial number, level conditions of camerate.

Special mapping cameras take one ve tical photograph and three or four oblique simultaneously. A special projectic printer transforms the oblique photographs to verticals of proper scale. E posure sizes from 5x7 inches to 9x1 inches are covered by the various camer now in use. Several models are use and designed to take cut films and plate as well as roll films.

Heretofore, information pertaining the enemy depended largely upon to more or less accurate observations of ma Today, however, the modern milital cameras, with their amazing magic, placellar roles in military strategy and so accurately and instantaneously.

While panchromatic films are more frequently used than any other emulsion, the aerial photographer is being trained to up the invisible rays below the visual red the spectrum, namely "infra-red."

In camouflage use, infra-red determany secrets. The enemy moves artille into positions overnight. Guns are camouflaged by trees and boughs, trenches a concealed beneath green-painted canvathis is, of course, a problem often co

(Continued on Page 27)



Effective cooperation of stillmen has been a big factor in the Gene Autry exploitation buildup. These publicity photos are representative of the various appeals used.

Local 659 members whose shots are included here are Joe Walters (left center and bottom), John Jenkins (right center). and Dave Farrel (right bottom).



National Screen Service building in Hollywood, where bulk of world trailers are produced.

ladies, please remove your hats!

The birth of the trailer, and its development to an important industry within an industry as a potent selling force for pictures, is told here in the opening article on a phase of picture making with which many perhaps are not acquainted.

> By TOM BAILY Director, National Screen Service, Hollywood Studios

IF YOU don't want to read an ad in a newspaper, it's awfully easy to turn the page. And, if you're bored by the rich, pear-shaped tones of an announcer's remarks anent "Parisienne Lip Rouge," vou can twist him into oblivion.

But trying to turn off a movie requires the agility of a contortionist. Unless you can hide beneat's the seat, you can't keep your eyes off the screen.

All of which indicates that the motion picture trailer is the most potent advertising force there is. It is the voice of the motion picture industry. But the trailer must be good to be potent. Hollywood is trying to make its trailers good ... and better.

The trailer was sired by the old, handpainted slide, for it was 'way back in those glorious and hallowed days when this industry was just a kid in three-cornered breeches-in those days when movies were flickers and lived up to that name that some enterprising theatre manager ordered a couple of slides from a twoby-four ontfit down the alley off 47th Street.

One of these slides urged feminine patrons to doff their Gibson-girl millinery: the other two suggested that the operator was awfully busy changing spools and that he'd have the second reel of the super-epic threaded in a moment.

That was the birth of the trailer. Records fail to show the name or the alias of the theatre operator, but records do show that another flicker-house proprietor down the same street added a slide which read: "A COLOSSAL EVENT IN CINE-MA HISTORY IS COMING. MARY PICKFORD IN HER LATEST AND MOST DRAWATIC TRI-UMPH. 'THE NEW YORK HAT.' WITH A

CAST OF HUNDREDS!"

Records also indicate that a New York newspaperman, a protege of the great Charlie Chaplin, walked into the theatre just mentioned, that he might forget the worries of re-writing other men's stories. and while seated in the uncomfortable little amusement temple saw the possibilities of an industry within an industry. He realized these possibilities a few years later when he became president of National Screen Service.

This company celebrates its twentieth anniversary this year. Two decades of trailer-making are behind this organization, whose home offices are in New York. whose nearly two-score exchanges cover the United States and England and whose local studios produce many of the trailers exhibited around the globe.

In the silent picture days, all of the actual trailer-making was done in New York. As a unit publicity man in a major studio, this writer recalls when he had to scrape together 1000 feet of Gary Cooper's picture, "Beau Sabreur," without bencfit of the thrilling action scenes, ship them to New York. Any time any key scenes were unobtainable. Hollywood didn't voice much worry, but National Screen Service

The heads of NSS are forward-looking men who have the utmost faith in their business. They believe in the potency of the prevue trailer, of the impotency of a bad trailer. And, believe you me, they have the knack of raising Cain if some prevue emanating from Hollywood whether it be on an epic or an independent's low-budget picture-doesn't contain every possible element of showmanship.

To end some of those problems, Presi-

dent Herman Robbins opened a studio in Hollywood, manning it with trailer-trained technicians, artists and editorial men. Located at 7026 Santa Monica Boulevard this plant is considered one of the most ideally-laid-out miniature labs in town. Its laboratory and cameramen all are IATSE members. National Screen was the first of this type of company to sign with the IA

The work of these units will be dis cussed in a later article. This installment has to do with the editorial and art side of trailers.

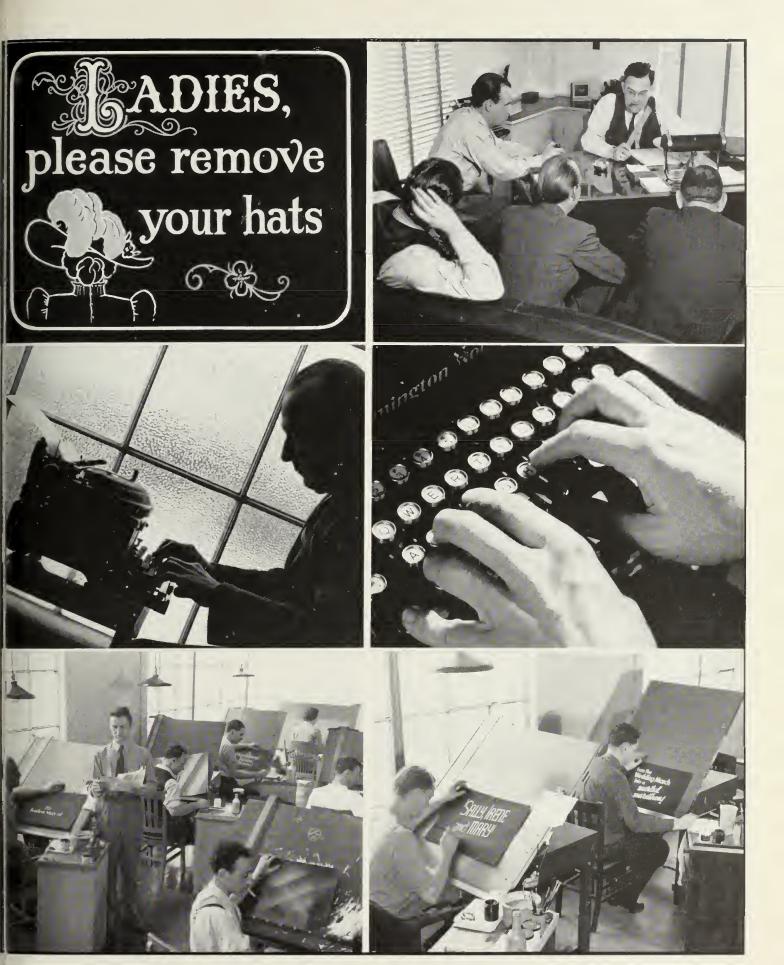
Today, the trailer is not the trailer of former years. It is the product of a highly-geared industry of editorial and mechanical efficiency, recruiting and em ploying specialists from every branch of the film industry. Writers, artists, camera men, lab technicians, film editors—eacl man is a specialist. Trailer production demands the employment of specialists.

The average picture totals 6000 feet of more, or a running time of 65 minutes But, as trailer producers, we must create your desires to see that feature picture in an average of 170 feet, or nearly two minutes of screen running time. Less than two minutes to tell our story speedily and convincingly.

Therefore, the tempo of a trailer i vastly different from the tempo of a fea ture. We cannot establish moods. We must get to the climax of a dramatic situal tion; to the peak of a comedy situation to the very essence of dialogue. W must sell and sell decisively, or we have dissipated the screen's most valued advertising medium.

No longer are such extravagant term as "stupendous," "colossal," "gigantic used as our selling forces. The publi

(Continued on Page 22)



e modern trailer has developed from the old-time slide above. Now a highly skilled industry, some of the people who make click are shown here. (Top, right) Tom Baily, Gene Fox, Jim Majorell, Walter Temple and Al Parmenter in a title conference, enter) Walter Temple, trailer editorialist. The hands are Gene Fox's, title writer. (Bottom, left) Russell Roberts. Paramount, with Don Miller. NSS art head. Title letterers at work (right).

THE ASSISTANT CAMERAMAN'S JOB

Busier than the fabled one-armed paperhanger is the assistant cameraman. An important cog in the industry, his duties are outlined here, with an explanation of the differences between black-and-white and color work.

By JIMMIE STONE

Assistant cameramen fall into two classes: namely, black-and-white and color. While in each of these the men are trained along similar lines and are naturally in possession of assistant cameramen cards. still there is an important difference in the two classifications.

The black-and-white assistants outnumber the present color assistants by a large majority, but color photography is making rapid strides in approaching the black-and-white output. It has been a long effort to cultivate the general theatre public to "color consciousness." Color in its infancy was very disheartening to the "film fans" and it took endless persistence of the chemical world to bring to us the high standards of today's color processes.

To the assistant who earns his livelihood in motion pictures, a great deal of credit is due. This statement may best be analyzed in following the responsibilities of the assistant through the course of his daily duties.

To be a good assistant cameraman necessitates a knowledge of the different types of cameras in use, the many different types of photographic accessories, studio equipment, dark-room technique and procedure, etc. He must be a "jack of all trades."

At the start of each day's "shooting," it is up to the black-and-white assistant to set up the cameras, thread them, check the lenses for any particles of dust or possible fingerprints. He may have had to carry the equipment anywhere from fifty feet to half a mile through snow, sleet or water or possibly up the face of a cliff or mountain. Nevertheless it is up to the assistant to spot the camera where the first cameraman has decided to set-up. The assistant must assume responsibility for its safe arrival and set-up at the given camera-angle.

The next thing on his daily routine is to make the slate ready, giving the name of the studio, the production number, name of picture, name of director, cameraman and operating cameraman. He must then consult the script girl for the "scene numbers" to be used as well as the "sound track numbers" for the film cutters. In addition to this information he must keep an accurate "log" of all scenes and takes.

At any moment the first cameraman may ask for a hand-test. This means that the assistant must put into practice his knowledge of dark-room technique and give an immediate developed wet hand-test before light conditions change in the event that the scene must be reshot. Frequently, on location, he must spend his evenings in cleaning the camera and making it ready for the next day's shooting. From this outline of duties it is obvious that the assistant cameraman's job is indeed important.

In what way does the black-andwhite assistant cameraman's work differ from that of the color assistant? This question will be discussed in the following section.

Requirements for a Technicolor Assistant

To be eligible to assume the occupation of color assistant the individual must be thoroughly familiar with all the requirements of the black-and-white assistant. Meeting these requirements he is then placed under the guiding hands of an instructor who is thoroughly acquainted with the high precision equipment of Technicolor. This training takes at least six weeks, during which time he is given every opportunity to learn the importance of proper threading of the camera and care of the prism. Strictest cleanliness of the equipment is constantly demanded.

Technicolor cameras are designed to accommodate three negatives. Since registration of the three negatives is a primary factor to good color every precaution is taken to assure the producer the highest quailty from the camera standpoint. Technicolor cameras, because of their great size, naturally entail great weight. It is therefore necessary to distribute this weight as evenly as possible in various carrying cases. Some idea of the equipment necessary to shoot a major picture is provided by the fact that frequently a ten ton truck is needed to transport the photographic equipment from the camera department of Technicolor to the studios.

Technicolor assistants fall into two classes: assistants and technicians. The technician is a man who has served his tour of duty with Technicolor and is sufficiently acquainted with all the principles of the camera. His judgment pertaining to the actual operation of the mechanical side of the camera is final. It is up to him to pass on every scene photographed from the camera standpoint. He must follow focus for the operator cameraman and make the necessary adjustments of the stop diaphragm, given him by the first cameraman.

He must periodically inspect the prism

after each "O.K. take" to make sure that there is no possibility of lint or dust blanketing the aperture or shooting surface of the prism. Failure on his part to detect the smallest of specks could easily ruin an expensive scene for the producer.

"Why?" you may ask. This can be best explained when one realizes that if a hair or bit of lint were to obscure a small portion of one of these apertures the tiny object would case a shadow on one of the color-records (negatives). Naturally, there would be an absence of photographic image on this color-record. Therefore, in the final printing, this hair shadow would appear not as a black shadow or line but instead as a complementary color to the record its shadow had cast. Ordinarily in black-and-white photography this shadow would print black and probably never would be noticed unless it were in the sky area or on a light surface background.

It is probable that a camera accommodating three negatives might be more susceptible to scratches so the technician and assistant are always on the alert for any indications. Green or new emulsions have been known to pile-up in the apertures of both black-and-white and color cameras. This condition could easily cause a scratch if not noticed by the technician. It is up to the trained eye of both the technician and color assistant to be able to inspect in the shortest period of time the negatives and pass positive judgment on their condition.

In order to systematize these types of conditions the technician operates on the left side of the camera, where he has everything of importance at his fingertips. He changes mattes in the viewfinder, follow focus, and makes lens changes. He inserts filters and effect mattes. In general he is the mainstay of the camera operator. Also on the left side of the camera is an door which affords the technician easy access to the prism for inspection.

The right side of the camera, better known as the bi-pack side, is left for the color assistant to inspect and determine whether or not the camera is operating or functioning correctly. He also has a tachometer and rheostat for ascertaining the correct camera speed in case of wild-shots.

Since Technicolor is a color service at the call of all studios and as every studio has for the greater part different types of sound equipment and electrical current.

HANDS AND HEADS

How hands help head studies is the subject of this article by a portrait artist who has specialized in developing subtle accents to facial expressions and creating interesting compositions through skillful placing of hands.

By ERNEST BACHRACH

(For twenty-five years the author of this article, which is only introductory to a detailed exposition of the part that hands play in photography. has been a portrait photographer. True, this time includes his high school interest in the art; while he was studying to be an electrical engineer, but even then he was thinking primarily in terms of the studio.

Both art and science were set aside temporarily while he was in France during the World War with a Medical Corps unit attached to the Aviation Section. In 1920, however, he signed up with old Famous Players Lasky Corporation for a seven-year stretch. During that time he was a pioneer in producing illustrated titles. Incidentally, he did some of this work again recently on "Edith Cavell." In 1925 he came from New York to Hollywood with William DeMille to shoot some action stills, which were an innovation then and the forerunner to "candids."

Bachrach has been with RKO Radio for the past twelve years. It is interesting to note that he still puts to practical use his early schooling in electrical engineering, building radio sets and electrical gadgets. Another hobby is painting, portraits being favored in this art form just as he is best known for his fine work in phographic portraits at RKO.

Last not not least he is one of the pioneers who attended the first meeting of Local 659. IATSE, thus rating the honor of charter member.

—Ер. Note.)

HERB ALLER, our esteemed Business Manager and a general all around good guy trops in to see me the other day with the rack, "Where the h—— are those pictures you've promised me for the last ten issues of International Photographer?"

"Gee," I comes back at him. "I've got nothing to offer that's original or new ake a look for yourself at those hanging in the corridor—just cast-offs. Some are three or four years old, but I have some new ones coming up." I adds, hedging.

new ones coming up," I adds, hedging.
"Now look, Ernie," (that's me) "you've been asking 'Why don't you give us something other than the text book stuff we're all familiar with,' Aller says. "But when we call on you you want to give us something years old. Now take this one for instance of Joe Penner. How about that? Look at the way his hands are worked," goes on Herbie, souping me up to the ears, but incidentally striking one subject most interesting to me—HANDS.

Hands: subconsciously, unconsciously and consciously. I have watched and studied them all my life. The man who imparted photographic knowledge to me had the most unusual hands—long, strong, sensitive hands. His name was Frederick Holland Day. Considered in his time probably to be the greatest living amateur photographer. he was thirty to forty years ahead of his time, as modern as today.

"Hands," he once told me, "can make or break your pictures. Never permit your eyes to wander from your subject during a sitting, for no matter how composed they may be facially, their hands will reveal their innermost emotion."

Included in the group of pictures shown on the following pages are some studies illustrating how hands may be used to help the composition and express an emotion that will give an extra quality that is essential to successful presentation.

For example, the Joe Penner shot sans hands is just another head study. With the hands supporting the head and fingers intertwined, the perplexity indicated by his face is emphasized further. The result, I believe, is a more interesting composite.

It is characteristic of emotional people to use their hands freely while under stress. It follows then that a picture including hands will depict more than sheer beauty: it will be the expression of a complete reflex. Incidentally this is where the photographer has to use applied psychology because in order for the subject to adequately express an emotion there must be

a cause, an experience, something upon which an interesting and appropriate expression can be based.

The pensive expression of Virginia Vale illustrates this point. We had been discussing her schoolday friends and experiences and the attitude of fond remembrance shown facially is enhanced by the position of hands and fingers.

Maureen O'Hara's eyes indicate her state of perplexity or dubiousness but the position of the hands clinches the thought, while adding a certain roguish quality. In the case of Elaine Whitney, hands are an important part of the whole composition. The quality of quiet interest was achieved while describing to her the beauty of a painting that I particularly admired.

By way of contrast in the layout, Ann Shirley is shown without hands.

The expression in Charles Laughton's hand is a negative one. Showing only the back of the hand, and used here to partly hide the expression of his mouth, the effect is one of shyness. The picture was taken "on the fly," with those inherent disadvantages, while Laughton was working on "The Hunchback of Notre Dame."

Again, by way of layout contrast, recent shots of Orson Welles and Raymond Massey are included. Welles is right in the middle of a unique four-way contract with RKO Radio: producing, writing, directing and acting. Massey, of course, is practically synonymous with Abraham Lincoln, the role he has portrayed so successfully on the stage and now is doing for the screen.

These last three mentioned illustrations prove that hands are not the only thing that make a picture. However, I have some more studies for next month, when I will elaborate on the fact that hands cannot be used as you find them. They must not be emphasized, except on rare occasions. They must be judiciously placed—by suggestion. never by touch, until suddenly the picture is there; SHOOT IT. Next month I shall deal with the exclusive treatment and study of hands, if you are still following me.

it is necessary for Technicolor to have sufficient types of motors to meet these needs. There are wild motors, interlock, synchronous, "F" channel, high-speed and motors for single-frame or stop-motion. In order that these motors may be quickly changed to meet the condition, it is neces-

sary for the technician or assistant to make gear changes in a moment's notice. Proper gear ratio is necessary so that the camera will turn at the required speed.

Technicolor cameras built in their own machine and engineering departments also

necessitate special equipment for their use. The blimps are of huge proportions yet very compact for this massive camera. It takes two men to carry the blimp with safety to the equipment. If the camera is in the blimp it is a general practice

(Continued on Page 22)



Hands are important in the Bachrach formula for successful portraits, as mentioned on the preceding page, but that good pictures can be had without them too is shown by the shots on these pages of a group of RKO Radio players, all made by



where the charter member of Local 659, IATSE. From the left, across top, are Virginia Vale, Elaine Whitney, Charles toghton and Joe Penner; across bottom are Maureen O'Hara, Ann Shirley, Orson Welles and Raymond Massey.

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South America Heard From

• From South America, where he is working on "South American Way" as assistant cameraman with a 20th Century-Fox unit, Bob Carney, member of Local 659. IATSE, wrote last month to say that Paul Perry also is working with the unit. Paul's many friends will be glad to hear that things are going well with him in Buenos Aires, where he has a photographic laboratory. In his letter Carney said he doubted that Paul would ever return to the States except for a visit because "this is one of the most beautiful cities in the world, he has good connections and innumerable friends and living expenses are much less than Hollywood." Paul is a life member of Local 659.

Crawford Cops News Award

• For the second consecutive year, Joan Crawford has been awarded the annual prize of the Hollywood News Photographers' Association as the "most cooperative star of the year." Bette Davis was

At a luncheon in the MGM commissary, the news cameramen presented Miss Crawford with a solid silver cigarette box engraved with her name and the details of the award.

New Oscar Committee

• Frank Capra, president of the Academy of Motion Picture Arts and Sciences, has appointed a committee of art directors to consider any changes in rules which should be adopted to govern the Academy Award for Achievement in Art Direction. The committee, under the leadership of Bernard Herzbrun, consists of Lionel Banks. Hans Dreier, Cedric Gibbons, John Victor Mackay, Jack Otterson, Hans Peters. Van Nest Polglase, and Bertram Teitelbaum.

Counterfeiters Exposed

MGM Studios, working with the U. S. Secret Service, rushed a recently completed film in an effort to lessen the possibility of the passage of counterfeit bills during the Christmas shopping rush.

The latest Crime Does Not Pay subject, "Know Your Money," was made with the primary purpose of educating the public to detect counterfeit money. But, because the government was anxious to have the public see the film before Christmas. so as to guard against bogus money, the film was released six weeks ahead of regular schedule.

Noiseless Power Generator

• The new noiseless power generator, perfected by Lou Kolb at MGM, got its first workout furnishing power for the village festival scene in "Florian." It is so perfectly sound-proofed that it can be placed anywhere on a set or location and never be heard.

Mould Cuts Make-up Time

• Jack Dawn, MMG make-up chief, has perfected a metal mould for his plastic face inlays. A secret alloy is fitted to individual faces by a secret process, plastic material moulded over it, eliminating the plaster casts formerly used. It saves hours of make-up and processing of inlays, which require less baking than when on plaster.

New Derrick at Paramount

• Delivery of a \$6,000 tractor crane capable of handling more than 10,000 pounds, was made last month by Lee Hinson, Paramount Studio transportation head.

The new boom, made by the Hughes-Kennan Company of Los Angeles, is being used in hoisting boats which the studio trucked to Baldwin Lake, location of "Safari," Madeleine Carroll-Douglas Fairbanks. Jr., drama.

The derrick extension of the machine is 40 feet.

Sherman Unit Moves

Because of heavy production at General Service Studio, home lot of Paramount's Harry Sherman unit which produces the Hopalong Cassidy series, filming of "Hold Your Horses" will be transferred to Grand National Studio, it was announced by Sherman early this month.

William Boyd, as usual, plays the starring role in the new picture. Julie Carter has been cast in the feminine lead, with Russell Hayden, J. Farrell MacDonald and Francis McDonald playing supporting roles.

Following two days of interiors in the studio, the company will move to Newhall to finish the picture against the rugged background of that vicinity. Lesley Selander will direct.

To Shoot Ballet Scenes

Joe Ruttenberg and Clyde DeVinna have been assigned as cameramen in addition to Karl Freund for Imperial Ballet scenes with Irina Baronova in "Florian" which features Robert Young, Helen Gilbert, Charles Coburn and Reginald Owen with Winfield Sheehan as producer. Edwin L. Marin is directing for MGM.

SMPE to Atlantic City

The Board of Governors of the Society of Motion Picture Engineers has announced the selection of Atlantic City as the site of the 46th semi-annual Convention of the Society, to be held April 22 to 25, inclusive, in the Chalfonte-Haddon Hall Hotel. W. C. Kunzmann, Convention vice-president, is completing tentative arrangements for the meeting. The Papers Committee, under the direction of J. I. Crabtree, editorial vice-president, and Sylvan Harris, Paper Committee chairman. has already begun its work of preparing the papers program. Members of the Society who are preparing papers for the convention are requested to communicate with the Society's office as early as pos-

Treasure Island at Night

 What is probably the last and certainly the only night motion picture of the San Francisco Fair, will serve as James A. FitzPatrick's next MGM Traveltalk. The new one-reeler, "Night Descends on Treasure Island," is the latest in the popular Technicolor series of FitzPatrick's all-American films, and will be ready for release early in 1940.

Leap Year Featured

• The fact that 1940 is leap year hasn't

caught Pete Smith napping.

Accordingly, Pete's next MGM Specialty will be titled "Woman Proposes," and will deal with a specific case of a woman, who is out to get her man and gets him. The story and screen play are by Johnny Hines, who will also direct.

Buying for Argentine

After seven years at the head of technical departments of the Pampa Flms. Buenos Aires. Oren Roberts, former Paramount special effects expert, has returned to Hollywood for a month's study of new equipment.

Roberts will confer with Paramount officials on the purchase of high-intensity arc lamps, set materials, such as hard enamel flooring, and projection equipment, he said. Irmin Roberts of the special effects department is his brother.

Zipser Shooting in Asia

Carrying a Leica and a 16 mm movie camera, Sidney Zipser, veteran member of Local 659, IATSE, is off on a tour of Asia, to do some shooting for himself. He has been on the Technicolor staff for many years.

TELEVISION CAMERA OPERATION

By NELSON C. McEDWARD

When Herbert Aller, Business Representative of Local 659, asked me to drop in at Tommy Lee's Television Broadcasting Station W6XAO, I saw a large square box on a perambulator and wondered how live images could be reflected through it, but I soon found out.

The image is upside down and looking through the center of the camera it is made very small. The lens is about 5½: focal length. It is shot wide open at 2.7 for proper results and to reduce the amount of light needed.

In television work it is vitally important to keep off the large cable between the camera and the control room, as one of the thousands of tiny wires inside it can easily be broken. This would cause a wave across the screen and necessitate hours of wasted time in making repairs. Also, the assistant must not dolly the perambulator back and forth too fast as the camera must be brought to a stop at the end of the cable and might be broken off if stopped too abruptly.

The assistant cameraman on the dolly shots is an important factor in judging timing from a long shot to a closeup, which movement must be made very slowly.

The cameraman has to follow focus shots while he shoots, under present conditions. However, Tommy Lee is getting a new camera soon and the focus will be taken care of in the control room, thus easing the strain on the eyesight. A finder will be installed at the left of the camera.

Light is provided by 2000 watt spots, of which there are eight and one broad. The Television studio is small, making it difficult to place the lights so as to get the correct lighting, which must be changed as the different acts take place.

The difference between Television and studio lighting is that in the studios the lights are adjusted during the various rehearsals to secure the perfection evident in the finished result flashed on the theatre screen. In Television there are eight or nine acts, with only a ten second lapse or change to move the lights for the next act. Of course a few lights can be shifted while the act is going on but it must be



Television is still just around the corner but some serious experimentation in perfecting television for regular commercial broadcasting is being carried on with the cooperation of Local 659, IATSE, and its members. Shown operating the television camera at Thomas S. Lee's station W6XAO is Nelson C. McEdward, assistant cameraman at MGM. He does television work in his spare time. Here he has the lens trained on Jimmy Starr. Herald & Express columnist, and Betty Jane Brown, USC drum majorette.

done very quietly as the mike is open and any noise from such adjustments would be undesirable.

I am at the camera from 8 to 9:30, which is a long time. All acts must move smoothly along until the final sign-off. The cameraman in charge of lights has earphones, the same as I have, and receives his instructions from the control room for corrections in balance on his end

Subjects I have photographed include Bobbie Breen, Jimmie Starr, Elmer Dyar (who gave a talk on his experiences as a flying cameraman), Wyndham Standing and many other fine players who so generously contribute their talents to Television experimentation.

I particularly want to thank Kyme Mead, George Lancaster, Mr. Kline of Tech, Mr. Rhinehart, Mr. Warren, Ray Ramsey and all the rest of the boys who so kindly helped on these programs. Kyme Mead and George Lancaster deserve special credit for their patience and hard work on lighting during the Auto Show. Due to lack of space they worked under cramped conditions and terrific heat.

Television is interesting work and I enjoy it very much. I wish all the luck in the world and continued success to Tommy Lee on his programs.

Millenium Is Here

• For the first time in screen history a sound film script has been completed without a single camera direction.

The scenario for "The Biscuit Eater," vritten by Stuart Anthony, deals with the idventures of a white boy and his negro hum, and a bird dog which they turn into

a champion from a no-good "biscuit eater."

"Because the drama deals with one of the fastest stories I have ever read." Producer Jack Moss of Paramount pointed out, "we deemed it advisable to write it in the same way—without technical details which always seem to slow up a scenario. As a result the completed story is much more interesting to the actors, for they are not 'taken out' of the feeling while reading their lines.

"Also, Anthony is humble about his ability to tell three expert cameramen—Leo Tover. Loyal Griggs and Harry Perry, as well as Director Stuart Heisler—how to set up their lights and manipulate the lenses! Any Anthony has written scores of films during the past decade."



Newsreel Camera News

- It seems that newsreels, like newspapers, are taken very much for granted by Mr. and Mrs. John Public—until a major catastrophe focuses attention on them. The antics of the powerful nations of Europe and Asia during the past three vears have brought the realization of the vital need for accurate portrayal of national and international events. Few of us will ever know just how tough the assignment in China and Japan has been but all of us remember the splendid piece of screen journalism turned in by Eric Mayell of Fox Movietone and Norman Allev of Universal when the USS Panay was sunk. Of course, such things fall in the general classification of "a nine days wonder" and after their allotted time are promptly forgotten. Do you wonder, as I do, what those two fellows are doing now? Well, two years ago they stood side by side on the deck of the sinking Panay. Today they are separated by the breadth of two continents but both are still war correspondents. Mayell, after a short rest, covered the capture of the ancient Chinese capital of Hankow and is now chasing the elusive scoop in the Philippine Islands. Alley, "Somewhere in Europe," is protecting the interests of Hearst News of the Day. Norman's last word to his family was that he was pulling strings to get an extra ration card so that he could have another pat of butter for his Thanksgiving dinner.
- But here in America, we turn to more "serious" things. Take Movietone's Irby Koverman in San Francisco. He has had to invade the sacred campus of one of the West's premiere girl colleges to cover the Mills College "Classroom in the Sky"-a college course for air-minded co-eds.

- Al Brick recently returned from Alaska where he was on location for a Movietone Short Subject to set up his camera at the U.S.C.-U.C.L.A. grid fracas for his 200th newsreel football coverage—something of an anniversary as Al started with the newsreel back in 1919.
- There is a desperate need in Los Angeles for a properly supervised and a recognized police credential for newsreel cameramen, their assistants and soundmen. Several half-hearted attempts have been made from time to time to provide newsreel cameramen with badges, cards, et al., only to have them become issued by the thousands. As a result of this loose distribution their value becomes nil and in times of stress, when minutes are precious, the newsreel cameramen find their every move hindered by the police. During the recent opening of Santa Claus Lane the merchants of Hollywood suffered inestimable loss in valuable publicity due to the ill-advised efforts of the police who forcibly took the eamera cars off the line of march. As a result, nary a foot of film exposed on the parade saw the light of day in the newsreel. A suggestion—issue police and fire line cards good for only three month periods. Have a picture at least two by three inches of the licensee glued firmly to it and make each applicant appear at headquarters in person to sign for and receive his card. Applications for the card should be approved by the news editor of each company and instances of willful lending of such a eard to another would constitute a revocation of the card for the remainder of that period. Such restrictions would result in a fine spirit of cooperation between the city and the newsreel.



Marshall McCarroll and award

Newsreel Takes Prize

Marshall McCarroll, member of Local 659, was among the select group awarded gold statuettes for their outstanding film work during 1939, in a presentation made in conjunction with the first anniversary of the Tele-View Theatre. Winners were decided by a patron's poll, conducted by the theatre management.

Presentation of awards was made by G. L. Carter, theatre president and was photographed for a special newsreel by Frank Blackwell, pioneer member of Lo-

The picture which won the award for McCarroll and Paramount was the American visit of the English King and Queen. It was a masterpiece of speed and workmanship. The King and Queen arrived in Washington, D. C., Thursday noon and at 3:00 o'clock Friday afternoon West Coast theatres were showing a full onereel release of their reception. Air express of course was responsible for getting the film here so quickly, but to photograph, process, edit, score and print a 1000-foot subject in such a short time was some sort of a record.

The entire Eastern staff of Paramount News was concentrated upon the job. A dozen camera erews and many commentators worked feverishly in the Washington heat. Special planes flew the film to the New York laboratory and editorial offices where it was eagerly pounced upon by the waiting developing crews. Make-up editors and a room full of assistants and cutters next tore into the job of cutting the film down to the 1000-foot limit for release.

The final step was a rush to the Newark airport with the first prints for Los Angeles. Meanwhile over 400 other copies of the edition were rolling out of the shipping room for other sections of the country. Thus was history made and a prize winner born.

Members of Local 644, IATSE

- William Miller and Bill Kelly, with their assistants, Nick DiNapoli and Paul Rogalli, have been in Pennsylvania, New York and Maryland for the past eight weeks on a production for Audio. No one can get the title as yet—a dark secret. They were home for their turkey dinner on Thanksgiving and are expected to be home for Xmas.
- Harry Squires just returned on the Rotterdam with 900 other refugees. Three died en route, but not Harry. Squires has been in the Belgian Congo for the last sixteen months as chief photographer for the tenth Gatti Expedition. The European war cut his story short but we are sorry we can't say the same about his return trip
- which turned out to be a nine-weeks' cruise in mine and submarine infested waters, and was Harry glad to get back to the good old U. S. A.! He promises to give us a story of his adventures as soon as he gets settled.
- Jack Painter just finished his latest Technicolor Fashion for Movietonews. Vivian Donner directing. The reports are it is the most beautiful one they have made—and the others were knockouts.
- Charles Harten and Jack Etra are shooting a short for Columbia in the National Capital. Etra says it should be titled: Charlie Harten Goes to Washington. "another Columbia masterpiece."

(Continued on Page 24)



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First Photolamp Show

• Apparently taking a tip from auto shows, General Electric's lamp department staged a photolamp show last month in New York, the first of its kind ever held.

according to GE officials.

Highlights of the unique show included exhibits of flash, flood, enlarger and projection lamps for still and motion pictures; displays and demonstrations of proper lighting for studios, including the new fluorescent lamps for general illumination and special lamps for color photography.

To demonstrate synchro-flash photography with focal-plane and between-the-lens shutters two jumbo cameras that operated in slow motion were on display. A motion picture, taken at 1000 frames per second, was shown to demonstrate the operation of various photoflash lamps used

with synchronizers.

New Projecto Case

• New convenience in the projection of 16 mm. motion pictures with the Kodascope Model EE, Series II, and the Kodascope Model G, Series II, is afforded by a Projecto Case with folding tripod legs, just announced by the Eastman Kodak Company.

The case is designed to eliminate preshow confusion, and supplants makeshift projector supports. It is a particular boon

TRADEWINDS

to projectionists who travel, and to those who must show movies before large groups. At home, it offers a more convenient and satisfactory support than the usual card table or taboret.

The case holds the projector, and a separate compartment on the side of the case houses the tripod legs. When the case is in use as a projector stand, the tripod compartment makes a convenient shelf, for extra reels and other equipment. The shelf may also be used to support a small still projector, if Kodachrome slides are shown in conjunction with the movies.

Price of the Projecto Case is \$25. Present cases for the Kodascopes G and EE may have tripod compartment added for \$15.

Lamp and Filter Outfit

• Agfa Ansco Corporation announces the addition of a new Darkroom Lamp and Filter Outfit to its line of photographic equipment items.

The new outfit includes an Agfa 3½x

43/4-inch Safelight Lamp housing and socket, one A3 Green Filter, one A6 Yellow-Green Filter and one A7 Red Filter. The filters, which are all 31/4x43/4 inches in size, are designed to provide maximum visibility with complete safety when correctly used and fitted with a standard 10-watt frosted Mazda lamp. The Safelight provides proper darkroom illumination for panchromatic films with the A3 filter, orthochromatic films with the A7 filter, and chloride, chloro-bromide or bromide papers with the A6 filter. The price is \$1.95.

Agfa Memo Speedgun

The scope of the Agfa 35 mm Memo Camera now includes synchronized flash-bulb pictures by the availability of the Agfa Memo Speedgun, especially designed and fitted for use with the camera.

Similar in design and construction to the famous Mendelsohn Speedgun, the Memo Speedgun provides accurate synchronization of flashbulb exposures at all camera speeds and with all types of flash lamps.



JUMBO CAMERA built by GE to demonstrate in slow motion synchro-flash photography at first photolamp show, held in New York. This picture was taken with one of the new midget Mazda photoflash lamps (No. 5) GE recently announced.

TRAILER INDUSTRY

(Continued from Page 10)

has long since refused to tolerate such superlative claims. The public does not believe in the Hollywood adjective. Today, we write down to earth.

The production head of any studio plays an important role in trailer production. A very representative time of that busy executive's daily routine is spent in consultation on the trailer in the various stages of its development.

The same consideration is given to trailer production as is given to the production of a feature. Conferences with studio heads . . . selling attitudes exchanged. Ideas and dramatic objectives are shared by the National Screen trailereditorialist with every department of the studios. Careers are in the hands of the trailer-maker. Incorrect presentation of a screen player in the trailer would be a hazard to his or her career.

And every agency used in feature production is brought into play in the building of a trailer.

The National Screen trailer-editorialist is a highly imaginative and versatile person. He is usually one who has scrved his apprenticeship in journalism; invariably he is the product of advertising and publicity in the theatre. While the creation of the trailer is the product of his invention, it is the production of many

The process of producing a trailer is intricate. First, the reading of the script. The editorialist becomes acquainted with the story. Then, the viewing of the rushes. or the completed picture. He then selects and orders his film and prepares his script. a script as detailed in every department as the scenario of a feature.

The title or narrative copy of the script is the story of the feature script. Camera treatments, the dissolves, wipes and optical effects are detailed. The art department then receives it for the title lettering.

Don Miller is head of the National Screen art department. Here, a conference is held as to the proper type of lettering to be used in the superimposed titles. A smart letter fits a modern picture; a strong, bold letter is right for a "Rulers of the Sca" or a "Of Mice and Men," and for a western, a rough, sweeping letter.

Fine letterers are required for such an art department. The slightest flaw is magnified hundreds of times. Here, too, creative minds must develop new styles in type, for the lettering must be the spirit of the picture.

Hollywood can take off its hat to its trailer-makers, for theirs is a difficult job. They must weigh the value of every picture; they must balance the cold logic of an audience with the super-enthusiasm of a producer. They must make every trailer

an individual selling force, and make it different. They must sell forcefully, yet must be subtle. And it is important that they remember that brevity is the soul of the good trailer.

Frank Whitbeck's one-scene, 90-foot trailer on the Robert Taylor-Jean Harlow success contained as much salesmanship as another trailer producer's 400-foot, 35scene prevue.

National Screen has a large staff of editorial men assigned to the various studios. The latter, too, have their trailer

Herb Moulton is in charge at Paramount, aided by Lou Harris, and supervised by Cliff Lewis; George Weiss and Walter Temple have been assigned trailer duty by Harry Brand at Twentieth Century-Fox: Arthur Housman is at Columbia; Robert Faber at Universal, working with John Joseph: Jim Pollak is trailer man at RKO, assisted by Fred Magnire; Gene Fox handles the bulk of the United Artists pictures; Jim Majorell gets his advice from Bill Peirce at Monogram and is aided by Jim Hathaway at Republic.

At Metro, Frank Whitbeck is in charge of advertising, publicity and trailers, and is assisted by Herman Hoffman and Oliver Garver. Ed Selzer supervises trailers at Warners, with Sandy Abrams at his right

Those are the chief trailer-makers of Hollywood, whose job it is to satisfy the producer, the director, the exhibitor, the New York offices and John Public.

(TO BE CONTINUED)

ASSISTANTS

(Continued from Page 13)

for four men to move it. Once the camera is in position on a perambulator or velocolator, the equipment is handled with the simplicity of a black-and-white camera.

The assistant cameraman starts his routine by threading the camera and making ready the required Technicolor tests, made daily. An H & D test is photographed on about five feet of film for the laboratory. By this test the laboratory is able to note whether or not the emulsion is

of the same emulsion speed as it was when first sensitized. Any tendency for an emulsion to vary slightly may be corrected in the laboratory before processing

The next five foot test is called the R & D test. R & D stands for registration and definition. This test shows the actual tendencies of the camera for registration and photographic definition at the time of shooting. The beauty of the Technicolor camera is that perfect registration is assured at all times, accounting for the high quality of Technicolor pictures.

After completing these tests the assistant then helps the technician in lining up the camera for the first scene of the day. He then prepares the slate and makes his log sheets ready for the day's shoot-

I have frequentlly heard people remark that all of the information required by Technicolor was unnecessary. Little does the individual making such a remark realize the importance of these records. Actually every entry is covering what one might compare to three cameras since each entry

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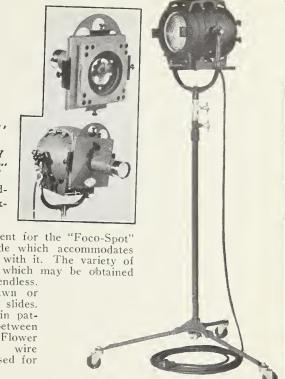


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covers the details of the three color separation negatives. Furthermore, Technicolor motion picture film is subjected to many processes before it is ready for the

The larger part of all information noted by the assistant determines the ease in handling the negative in the laboratory. Let's take, for example, failure on the part of an assistant to note the time of day or effect of the picture. If these items are not noted on the log sheets the laboratory would naturally assume that the picture should be printed in the normal manner and would proceed to do so. This could easily cause needless waste. So the complicated appearing log sheets of Technicolor are in reality a very simple and necessary negative insurance.

After every "O.K. take" the assistant is seen running out in front of the camera with the "lily." This term is derived from the phrase: "That last scene was sure a lily," used by directors as long as I can remember. Colorful charts and black-andwhite wedges appear on the unique device held by the assistant, which is in reality a control medium used by the laboratory. The "lily" is an important chart for laboratory timing in making the rush dailies for the studios. It also has other definite uses which I am not

permitted to disclose in these pages. After the "lily" has been photographed the assistant runs out of the camera angle so that a short test may be made of the actors and sets.

It is often said that it takes longer to "shoot" in the Technicolor medium than in black-and-white. This statement is greatly exaggerated. Technicolor has at all times endeavored to make color photography as easy to work with as blackand-white. This accounts for the standby camera which is always threaded and ready for immediate use. The time ordinarily lost in re-threading a black-andwhite camera is reduced in the case of Technicolor.

The camera which has exposed all of its negative is removed from the blimp or tripod by the technician and is immediately replaced with the stand-by camera by the assistant cameraman. A continuous series of scenes may be made by these means without the producer being conscious of any delay.

The assistant's duty is to always rethread the stand-by camera and make it ready for the next change-over. He must make out the camera cards and enter into the logs such information as is desired by the technician or cameraman. In the shooting of projection backgrounds or special effects departments it is up to the assistant to get all of the data necessary. Such information consists of: types

of projectors, carbons used, lenses used, the throw of the picture and width and height of the projected image, the number of foot-candles of light on the screen surface and the make of the screen. He must also note the lens height of the camera and accurately measure the distances from the camera to the actors and

The technician's and assistant's life is indeed a responsible one. He must be constantly on his toes to back up his profession. To be a good assistant he must be capable of "doubling in brass." Above all he is an "Ambassador of Good-Fellowship" to everyone in the industry.

'Drunk Driving'

• The Board of Officers of the International Association of Chiefs of Police at their quarterly meeting on Nov. 28 in Chicago adopted a resolution endorsing the film "Drunk Driving,' a short subject produced by MGM. The resolution urges all police commanders to use their influence to secure the immediate showing of the film in their communities.

"Drunk Driving" won the David S. Bayer Award for 1939, an award made each year to the organization which produces the motion picture, that, in the opinion of the judges, does most to promote traffic safety.

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Members of Local 644, IATSE (Continued from Page 19)

● Larry Williams and Don Malkames are working on another Jewish picture at the Ideal Studio in Jersey and from reports circulating around town their assistants. Wellstead and Holcombe are now "borscht" addicts!

The last trip of the Clipper brought in Neil Sulivan, Pathe News cameraman, from the battlefields of Finland. Neil has been over there ever since the war started. He covered the French front, then went over to the German side, and his last front was the Finnish—which, we believe, was almost his finish.

• Ray Foster and Tom Hogan are shooting a short. "Information, Please," at Fox 54th Street, which is the new studio lately finished by Fox for Pathe. Frank Donovan is directing.

• George Webber and Tom Priestley are up in Connecticut on a Paramount assignment.

• Charles Gilson, who is in charge of the March of Time's new feature production, "Ramparts We Watch," by Major Elliott, is returning to New London to finish up with his four able lensmen, Dick Maedler, John Geisel, Frank Follette and Burt Pike, Frank Calabria shooting stills. Assistant Ashley Abell is not looking forward to this with pleasure as it means he must leave his new bassinet occupant—a 10-pound daughter!

• Jay Rescher is on location at Jamaica shooting the exteriors of his picture "Poco-Mania," starring Nina Mae McKinney.

U. S. Watches Okie Scenes

• Uncle Sam is protecting his honor in a big way in Hollywood these days.

The federal government, it seems, is anxious that its camps for the Okies, the dust bowl refugees who follow the harvests in California, be represented on the screen accurately.

Partly for that reason, the Farm Security administration loaned 20th Century-Fox Thomas Collins, manager of all the Okie camps, to serve as technical advisor on John Steinbeck's "The Grapes of Wrath."

And Collins is looking out for Uncle Sam with due perspicacity.

In one morning recently he stopped production on the picture because:

1. The garbage cans around the movie U. S. camp didn't have lids. The government would never permit such an awful situation to exist.

2. The prop men had put wash tubs in front of the Okie tents. The idea! The U. S. provides a model building where the Okies may wash their clothes to their hearts' content.

3. There was a "slow" sign at the entrance to the camp. It seems the Okies don't believe in signs. No U. S. camp ever has them. The government instead digs a shallow trench all the way across the gate and that slows the Okie jaloppies down to a walk.

BOOKS

"Hand Book of Photography. Edited by Keith Henney and Beverly Dudley. McGraw-Hill. \$7.50.

Reviewed by Fred Westerberg

HERE WE HAVE an encyclopedia of photography for photographic engineers.

"This Handbook of Photography." says the editors, was born of their desire "to possess for their own use a comprehensive, authoritative reference work on photography and its technical and scientific application—a reference text having the directness, rigor and authority which might be found, for example, in the various engineering handbooks."

This aim has in large measure been attained. The work is comprehensive and it is authoritative. Almost every phase of photography is dealt with in which science and engineering plays a part. The twenty-three contributors are all specialists in their own field and they make ample use of the literature that has been published to date.

A fairly good compromise has been made between directness and rigor. Any particular topic can be quickly located and easily run down with a little side stepping here and there among the equations.

Many specialized fields of photography and the engineering problems associated with each are discussed. Prominent among these are motion picture and color photography. Also treated are ultra high speed, aerial, microscopic, spectroscopic and astronomic photography as well as other branches. Offhand, only one fruitful subject that might have been added comes to mind—undersea photography.

The fundamentals are all there, too: optics, development, light sources, sensitometry, exposure and all the rest. Many readers will be surprised at the large number of developing agents that have been discovered in the last few years.

There are many illustrations but as might happen in any first edition some of these have been mixed up and put in the wrong places. Unfortunately, there are all too few really serviceable working tables for a book of this scope, which aims to be the counterpart of a typical engineering handbook.

Just the same the book is a step in the right direction for it condenses into one volume the most significant aspects of photography from an engineering standpoint.

"How THEY MAKE A MOTION PICTURE." By Ray Hoadley and Roman Freulich. Thomas Y. Crowell Company. New York. \$2.

THE STORY of the motion picture from start to finish, through every stage from the scenario to the actual screen showing, is presented in this interesting volume.

Going back to 1886 and Thomas Alva Edison's idea to see the singer or performer whose voice was reproduced by the ancient phonograph cylinder, such highlights as the first motion picture studio in 1893 and the first public showing on any picture screen, in 1896, are reviewed.

Members of Local 659 will get a bang out of the illustrations showing the veteran cameramen of the industry working in derby hats while cranking their cameras by hand. On the other hand, the book shows a modern camera and other photographic equipment in the chapter on Photography and Lighting.

High tribute is paid to members of the photographic profession, who in the authors' opinions rank next to the director and writer in importance in picture making. The cameraman, they point out, must effect a difficult combination of art and science, working with the most elusive of mediums—light.

Other subjects treated are the studio, the story, scenery and sets, wardrobe, makeup, sound, props, editing and related major phases of movie making. The result is a comprehensive guide of what it takes to make a picture.

Every executive and others in the industry will find something of interest in this book. The studio worker confined to a particular class of work will better understand just where he fits into the whole picture of this top ranking industry. It would make good reading for friends and relatives in the "East" who want to know "all about Hollywood and the movies."

The text is very readable and is generously illustrated with photographs by Roman Freulich, member of Local 659, IATSE.

"Make Your Own Movies." By Arthur Gale and Kind Pessels. Published by Coward-McCann. Inc.. New York. Price \$3.50.

Here's a real handbook for the amateur movie maker. It opens by informing the reader that he doesn't have to master a lot of technicalities and then very concisely takes him step by step, through the whole procedure, including cutting, editing, the use of filters and lenses, how to get the best results with color and how to secure the composition the professional would have. The book is written by experts and undoubtedly often would be consulted by the advanced amateur as well as the beginner.

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THE ARMY

(Continued from Page 8)

fronted by the air men. From the air the hidden position is completely invisible, but by the use of infra-red sensitive emulsions the hidden secrets become known to our forces. Because of the peculiar characteristic of infra-red, green paint will photograph as a dark gray or black, while living foliage photographs snow-white in this curious invisible "light." The guns and troops are revealed as if they were coal black on a field of snow.

The great haze penetration qualities of infra-red also prove invaluable to air men under eertain conditions where regular panchromatic emulsions would be useless. Nevertheless, infra-red is limited to a large degree but raises promise of being greatly used for military purposes in the future.

But back to eameras. One of the most successful means of detecting the enemy's position is by the use of the "basque relief." Almost everyone at some time or other has had fun in making this type of relief. From a military standpoint, however, they are made in the following manner: an airplane flies over the enemy's position and makes a vertical photograph of a given terrain where known enemy emplacements are being used. The aerial photographer notes the altitude he is flying, the time of day and notes the type of light he is using. After making the exposure he returns to his base where the negative is developed and consequently printed on a process or positive film.

On the following day another plane takes off and duplicates the same conditions as the day previous and makes an exposure. The film is developed and dried and then placed over the process film made the day before and carefully set in register. Much to the amazement of the novice everything which has been moved or added to this section will appear as a black area to the naked eye. By enlarging these dark areas from both the first and second negatives the hidden truths of enemy movements are revealed.

Stereoscopic separations have proven highly beneficial in making aerial observations. The same principles involved in making the old type of parlor stereoscopic negatives are used but are greatly exaggerated. While the pupillary distance in making regular stereos is $2^{1/2}$ inches between the lens centers, the lack of foreground detail due to altitudes makes the stereo camra useless. Nevertheless, if two cameras are used with matched lenses of fixed focal length and subsequently placed on either wing tip of a bomber with a wing spread of seventy-five feet you would then have a pupillary distance of seventy-five feet.

From an altitude of 12,000 feet a definite relief is given when viewed through a special viewer, which is an elaboration of the old parlor viewer. The secrets of the ground topography are revealed in this manner. By increasing the altitude of the plane, even greater pupillary distance may be had by using only one camera. If a plane is traveling at two hundred miles an hour and the intervalmeter is set to make two exposures at five second intervals the result would be a pupillary distance of nearly 1.460 feet.

It is only natural to assume that stereos are limited as to altitude due to the similarity of the two negatives, unless exceptionally long focal length lenses may be employed. By having a known separation of the lenses and making the shot from a known altitude, and by careful measurement by special instruments to determine the height of even small objects on the ground, fake trenches are easily discernible.

These are only a few of the methods employed by the aerial photographer in present military practices. It is evident, however, that the present war is being fought to a large degree by the aerial photographers on both sides. Knowledge of the enemy's vital military and brain centers must be had before actual military advancement. Both sides openly admit making frequent flights for photographic reasons, which accounts for the small numbers of aircraft brought down up to the present writing.

While still photography is used largely in our National armed forces, motion pictures continue to play an important role in obtaining actual visual records of battles, both in the air and on the ground. These records are kept in order that they may be used to study the actual military strategy employed, long after batles have been completed.

Most of the cinematography is naturally made on the ground, showing such records as troop maneuvers, both foot troops and motorized cavalry, first-aid and hospital bases, supply bases, destruction done, etc. Those who are responsible for this cinema action are for the larger part men who have the ability to operate cameras under news-reel conditions. They must have a thorough knowledge as to what pictures are of the most importance for military records, and without regard for their own lives must "get the picture."

Every cinematographer in Hollywood is

far more useful to the Government with a motion picture camera on his shoulder than with a gun in the first line trenches. But that is not all. Every member of the Local 659, IATSE, who was in the service in the last war has proved his ability "under fire" and for this reason a large majority will be commissioned as officers to operate our cinema photo sections in time of great need.

Never in the history of photography have wars been so thoroughly fought with cameras. And what nation is better qualified to fight wars with eameras than the United States of America! A foreign military commander made this startling statement only a few months ago during the present crisis: "The army with the best photographic corps will win the next war."

PATENTS

By ROBERT W. FULWIDER

No. 2.178.612 — Photographic Silver Halide Emulsion Layers. Wilhelm Schneider and Max Hagedorn, Germany, assignors to Agfa Ansco Corp. Application July 15, 1936. In Germany July 16, 1935. 7 claims.

A silver halide emulsion containing a dye-stuff component fast to diffusion with respect to the gelatin.

No. 2.178,673—MULTIPLE FILM RE-WIND-ER. Iwan Serrurier. Los Angeles, Calif. Application Nov. 10. 1937. 5 claims. A film rewinder for simultaneously re-

A film rewinder for simultaneously rewinding several reels of film.

No. 2.178.882—Color Film WITH Sound Record. Withelm Schneider, Germany, assignor to Agfa Ansco Corp. Application Aug. 26, 1937. In Germany Sept. 8, 1936. 5 claims.

A process of producing a color and sound film by exposing the picture area while the sound area is masked, developing the film in a color forming developer, bleaching the silver, printing the sound record



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Landers HE-1311 Trissel SUnset 25992 and developing it in a black and white developer, and removing the undeveloped silver halide.

No. 2,179,244—SILVER HALIDE EMULSION FOR COLOR PHOTOGRAPHY. Wilhelm Schneider and Alfred Frohlich, Germany, assignors to Agfa Ansco Corp. Application Aug. 13, 1937. In Germany Aug. 22, 1936. 8 claims.

A photographic silver halide emulsion containing a dyestuff component fast to

diffusion.

No. 2,179,786—METHOD AND MEANS FOR MAKING CORRECTED COLOR SEPARATION IMAGES. Arthur C. Hardy, Wellesley, Mass., assignor to Interchemical Corp., a corporation of Ohio. Application Jan. 21, 1937. 7 claims.

A film for making color separation negatives and having a fast rear negative emulsion having a dye sensitizing it to one spectral region, and a slow direct positive front emulsion with a dye sensitizing it to another spectral region.

No. 2,179,817—CAMERA BLIMP. William Eglinton, Reseda, and Harry G. Cunningham, Los Angeles, Calif., assignors to R. K. O. Studios, Inc. Application March 31, 1936. 5 claims.

A sound-proof blimp for cameras having access doors for access to the reels, camera, and motor.

No. 2,180,194—Photographic Apparatus. John E. Burks, assignor to Max Fleischer, N. Y. Application July 23, 1937. 11 claims.

A projection printer for projecting motion picture films in a step-by-step process upon a sensitized sheet which is moved between each exposure.

No. 2,180,409—Photographic Material. Walter Frankenburger, and Herman Schulz, Germany, assignors to Agfa Ansco Corp. Application Nov. 11, 1937. In Germany Nov. 19, 1936. 1 claim.

A photographic material comprising a silver halide emulsion layer containing a dye selected from the group consisting of a phthalocyanine, a sulfonated phthalocyanine and a metal phthalocyanine.

No. 2,180,683—Sound Insulation Means for Motion Picture Cameras. Grover Laube, Robert Colby Stevens, and Charles Melvin Miller, Los Angeles, Calif., assignors to Twentieth Century-Fox Film Corp. Application December 11, 1937. 6 claims.

A motion picture camera in which the gear drive and the intermittent mechanism are rubber mounted.

No. 2,181,485—Gelatin Relief. Max Herbst and Walter Frankenburger, Germany, assignors to Agfa Ansco Corp. Application May 11, 1938. In Germany May 13, 1937. 8 claims.

A method of producing a relief in emulsions by incorporating very small particles in the emulsion.

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